

Historic, Archive Document

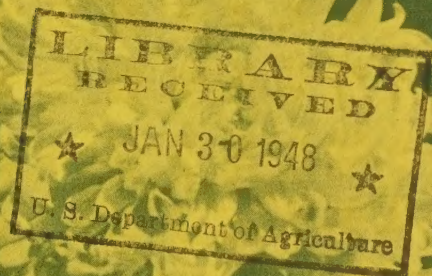
Do not assume content reflects current scientific knowledge, policies, or practices.

62.61

Fred C. Gloeckner + Co., Inc.
New York, N.Y.



Gloeckner
Chrysanthemum
Manual



1948



BETTER CHRYSANTHEMUMS

Better Chrysanthemums

Only a few generations ago early settlers in a new, undeveloped country started to build our nation. With ample natural resources, and the will to work, these hardy people made the most of their opportunities. Today the United States is a world leader in floriculture. Early in the 19th Century the commercial florists were largely responsible for the advancement in the culture of the chrysanthemum. During the 20th Century progress in science has broadened the floral industry.

Further advancement in the florist business will be made by producing better quality cut flowers, at a lower cost of production, and have them marketed without losing any of their natural beauty. To produce better chrysanthemums you must start with good, healthy, strong cuttings. We feel that we are in a position to offer you the best cuttings available and to help you produce a quality crop.

This crop must be carefully planned so as to select only good varieties and eliminate those that are poor and which generally clutter up our markets. The flowering dates should be carefully planned in advance to give a succession of flowers as the market requires them. The precision culture of planting, pinching, feeding, watering and spraying is here to stay and all growers of quality stock are rapidly following this procedure.

It is *Gloeckner* service to collect and make available the latest cultural information on this crop. Our staff is well qualified to help you select the best varieties and will gladly help you plan your requirements for the coming year.



15 EAST 26th ST., NEW YORK 10, N. Y.
LExington 2-4197 At Madison Square

MUM MANUAL CONTENTS

Anemone Varieties	38	Novelty Varieties	30-32
Cloth House	29	Pests and Their Control	26-28
Cultural Pointers	1-9	Pompon Varieties	36-37
Delayed Flowering	17	Pot Plant Culture	18-20
Garden Varieties	40	Pot Plant Varieties	39
Insects and Their Control	22-25	Re-Selection Program	33
Large Flowering Varieties	34-35	Shading Information	13-16
Newer Insecticides	21	Single Varieties	38
		Spring Flowered Chrysanthemums	10-12

TERMS OF SALE

Fifty rooted cuttings of each variety is the minimum that can be supplied.
More than 50 of a variety must be in multiples of 50.

PRICE OF UNROOTED MUM CUTTINGS

LESS THAN 50 OF A VARIETY	500 TO 950 OF A VARIETY	1000 AND UP OF A VARIETY
Same price as Rooted Cuttings	50c less per 100 than Rooted Cuttings	\$1.00 less per 100 than Rooted Cuttings



Better Chrysanthemums

CUTTINGS

Cuttings taken from vigorous growing stock, free from disease and insects, rooted in sterilized medium and then removed from this medium at just the right time so as to have sufficient root system will give you maximum results in heavier production and better quality chrysanthemums.

Handling Cuttings

The cuttings you purchase are ready for potting or flatting. Many growers plant these rooted cuttings directly into the final location. Ordinarily they will not require shading, but if they have been several days in transit and have softened up some, or if they are planted during warm, bright weather shading with aster cloth or paper is advisable. Under no circumstances leave the covering on the plants during dull weather or at night. It is well to syringe the plants frequently until they stand up and are showing signs of growth.

Unrooted Cuttings

Recent trials have proven that unrooted cuttings can be shipped, and rooted at the destination with good results. Upon arrival sprinkle the cuttings and place in a dark, cool location until they become turgid. Stick the cutting into pots containing a light porous soil mixture. After potting, cover with aster cloth and keep the cloth and soil moist at all times during the day. Rooting will start within 10 days and then handle these plants as you would your other plants. The unrooted cutting is not practical where small quantities are propagated.

Delays

The Railway Express Agency has done a marvelous job during the past several years, but occasionally they have had delays. Chrysanthemum cuttings will be injured from cold as well as being too long in transit. If the cuttings are slightly wilted, they can be immersed in water for a short period and then planted. They will react perfectly to such treatment. If the cuttings have been slightly frozen, placing them in a cool room and thawing them out gradually, or placing them in a pail of cool water to take the frost out will bring them through so that they will do just as well as cuttings that have had nothing happen to them. Of course, if stock is badly frozen, or if long delays have occurred so that the cuttings are heated, yellow or rotted, a claim should be filed at once with the express company.

Air Freight

Air freight is prepared to serve customers who are close to an airport, by phoning them when a shipment arrives, or reconsigning shipments via Railway Express to customers who are too far away to pick up shipments at the airport. Our experience this past season indicates that this service is very practical for the delivery of rooted cuttings in the best condition.



Healthy Well Rooted Cuttings



General View of Propagating Houses



Cultural Pointers

SOILS

Chrysanthemums will grow well in a wide range of soil types but a fibrous silt loam is preferred. Blue grass sod to which rotted manure has been added plus an application of super phosphate will give excellent results. A soil that does not remain too open is preferred for this crop.

Acidity

Evidence shows that the soil reaction should be slightly acid pH 6.5, although in many instances a neutral medium does very well. If your soil tests slightly alkaline apply $\frac{1}{2}$ to one pound of agricultural sulfur per 100 square feet of area. However, if your soil is acid apply 3 to 5 pounds of agricultural ground limestone per 100 square feet of area.

Aeration

Proper drainage and proper aeration of the soil are very vital to good growth. Many times improper drainage of the bench or bed is the reason for a poor crop. No wet spots should ever be present. Soil drainage may be improved by the addition of various materials. Any coarse organic material such as manure, alfalfa hay or clover hay applied at the rate of not to exceed one fourth the volume will separate the soil particles sufficiently to increase pore space. Heavy applications of sand to a soil have not always proven of value to a chrysanthemum crop. Aeration may also be increased by proper cultivation of the soil. Frequent scratchings are recommended during the early growth of the crop.

Steam Sterilization

Old soil when properly managed will give comparable results with fresh soil. Add a quarter of the volume of humus in the form of manure or chopped alfalfa or red clover hay. Steam sterilize to destroy the verticillium wilt fungus as well as improve the structure of the soil. Steam sterilization may be done with the use of three inch tile or down spouting with $\frac{1}{8}$ holes drilled every six inches on each side of the pipe. Use two lines in a three and one-half foot bench. Ridge the soil to the center of the bench directly over the lines, covering with tarpaulin, canvas or sisalkraft. The Thomas method is very similar with the exception that the pipe is laid on top of the soil and then covered so as to make it airtight. The Thomas method is not recommended where purlin posts are in the bench. By introducing the steam in the center of a 100 foot bench and sending the steam both directions a more thorough sterilization is accomplished than if the steam were to be forced in at the end of the 100 foot bench. Cover the sides of the benches so that the entire bench and contents are heated to 180°F. Remove the covering one hour after the steam has been cut. This allows the excess moisture to pass from the soil as vapor. Leach heavily immediately after sterilizing to reduce excess fertility.

Chemical Sterilization

A chemical which has proven its worth is Larvacide. This material must be used when the greenhouses are empty to avoid injury to adjoining crops. This gas is applied in liquid form with a special applicator so that 2 or 3 c. c. are applied at 10 inch centers. The soil should be moist before applying. A good suitable covering should be placed over the treated soil to keep the gas in the soil for at least 48 hours although a water seal applied 2 to 3 times every 24 hours will suffice. The soil temperature should be at least 60 degrees or higher. When used properly you can expect favorable control of insects, diseases and weed seeds.



Thomas Method of Steam Sterilization

Stringing Pompons

Gloekner

Cultural Pointers

PLANTING

Chrysanthemums grow equally as well on a raised bench or on a ground bed. The care is slightly different in that raised benches dry out more frequently during the summer and early fall months. It must be remembered that a good circulation of air is desirable, yet a direct draft is not advisable.

Planting Date

The plants to be shaded should be planted seven weeks before the shading date in order that sufficient growth is made to give necessary height before black cloth is applied. For normal flowering all planting should be done in the month of June. The plants should be established in the soil three to four weeks before pinching.

Planting Rooted Cuttings

Many florists are planting rooted cuttings directly into permanent locations. This not only reduces several handlings and production costs, but also produces a better quality bloom. We fully realize that it is often an impossibility for all to treat their chrysanthemums this way. However, we have found that young, soft plants are superior to hard woody plants.

When planting rooted cuttings either into 2¼" pots or directly into the bench, dip the cuttings, roots and all into a solution of **Fermate** 1 ounce to 4 gallons of water. This will establish the plants faster as well as protect the young plant from septoria leaf spot. If you plant in a cloth house or directly in the open be sure to add this to your must list.

Shading the Glass

When planting rooted cuttings into their permanent position it is necessary to shade the glass or to put aster cloth directly over the young plants until they are established. When shading the glass be sure that the material is applied lightly.

It is definitely advantageous to have some shade on the glass during the months of June and July when the light intensity is the highest. Cloth houses eliminate approximately one-third of the light and we all know what excellent results are obtained under this enclosure. Therefore, shading the glass lightly should likewise be beneficial. Remember not to allow the shade to remain on the glass too late in the season.

Distance of Planting

For good quality pompons we prefer to plant 7x8 inches or 8x8 inches pinched once, and thin the shoots to three per plant. Nothing is gained by planting at a closer distance. Light intensity should be high at the base of the plant for quality blooms and if planted too close we have lost their factor which promotes quality. Large flowered varieties are generally planted 8x8 inches or 8x9 inches, this also applies to disbud anemone and single varieties.

Several growers have had success by planting two plants to a hill, spacing the hills 10x10 inches, pinching once and allowing six sprays per hill. This will require a few more plants but it is claimed that when planted further apart it is easier to spray and string. A higher production per square foot is obtained.

Knowledge of the varieties, date of benching as well as your method of growing will largely govern the distance of planting.



Wire Support For Standard Mums



Cultural Pointers

FERTILIZERS

Soil structure is the key to soil fertility. The response of chrysanthemums to fertilization depends upon a favorable soil structure. It is known that plants require nutrients, water and air for growth. Good soil structure will provide proper air and water relationships. Therefore, it behooves us to give proper attention to the soil before starting the crop.

Feeding

Chrysanthemums do much better right from the start if the soil is not too rich. Very often this crop will start off faster in new soil as compared with old soil that has been sterilized just because of the lower nutrient level in the new soil. When using new soil, apply 3 to 5 lbs. of super phosphate per 100 sq. ft. of area, plus a liberal application of manure before planting. Phosphorus moves slowly within the soil mixture. It should always be added before the crop is benched so that it may be mixed thoroughly into the soil. Two to three applications of a complete fertilizer, such as Electra, made after the plants become established and until color shows will be adequate. Electra applied at the rate of 2 pounds per 100 sq. ft. of bed is sufficient. Never apply fertilizers to a dry soil. Water lightly first, then apply the proper quantity of fertilizer, then water heavily. Remember that the plant is the best guide as to fertilizer requirements and that more mums are ruined by over feeding than by nutrient deficiencies.

When using sterilized soil the best recommendations to follow would be to analyze your soil from time to time. We have found that when the following nutrient levels are kept, good crops are the result. Nitrate nitrogen should be 10 - 25 parts per million; phosphorus 2 - 5 parts per million; potassium 20 - 40 p.p.m. and calcium near 150 p.p.m. To increase the nitrate level feed one pound of ammonium sulfate per 100 sq. ft. of area, and to bring up the potassium apply muriate of potash not to exceed 1 lb. per 100 sq. ft.

In the cooler weather and shorter days of September omit the nitrogen if the plants are growing freely. The mum assimilates more phosphorus and potassium during the fall when temperatures decline. Therefore, it is more desirable to apply a complete fertilizer shortly after the buds are visible.

Excess or Soluble Salts

The foregoing pertains to plants that appear and behave normally. If plants are stunted, look yellow and sick, they are probably suffering from an extremely rich soil. Many greenhouse soils are excessively rich and chrysanthemums will not thrive in such a medium. If this is the case, the remedy is leaching with water. Lots and lots of it. Use more water than you ever applied to a bench before, two or three gallons per square foot. The water that runs through the soil carries with it the excessive plant food and allows your plants to recover from their indigestion. Did you ever notice fine healthy growth on a small part of a sick-looking bed of mums, and observe that it was under a broken pane of glass that allowed the rain water to come through and leach the soil below? Such a sight is a sure indication that the soil needed leaching. In most cases this condition is the result of the foolish and indiscriminate use of fertilizers. Use them when needed, but use them judiciously. Remember fertilizers are plant food in an extremely concentrated form.

Mulches

A mulch of peat, rotted manure, alfalfa or red clover hay applied two to three weeks after planting will help maintain a uniform moisture in the soil and increase the growth. The strawy mulches should only be used when the nutrient level is high as the bacteria remove the nutrients from the soil to decompose the strawy mulch.



Nylon Cloth House Showing Well Grown Gold Coast



Cultural Pointers

PINCHING

For a good number of years the reason for pinching was to regulate the number of stems on the plant. In recent years we have learned that in case of pompons or singles the pinching determines the type of spray formation. With standards, pinching will determine the type of bud formation, whether it be a crown or terminal bud.

Time Pinching

The precision culture of chrysanthemums is all set-up around the "Last Pinch". To grow a quality pompon you should receive the rooted cuttings sometime in June and then plant into the permanent location approximately three weeks before the date listed in our list of varieties under "Last Pinch". When growing shaded pompons the "Last Pinch" should be 35 days before the shading date. With standards under black cloth the majority of varieties should likewise be pinched 35 days before shading date.

Time pinching standards will eliminate the formation of the crown bud and produce terminal buds which will in turn produce a much straighter flowering stem.

All pinching should be finished by the early part of August as too late a pinching might encourage blindness and short stem length. We do feel that those people who grow their mums on ground beds should pinch about a week earlier than those on raised benches.

Pruning

Another important factor is to remove all shoots but 3 or 4 per plant, in a few instances only 2 shoots are allowed to mature. When fewer breaks are selected the planting distance should be closer. If you prefer to have a number of smaller sprays, with fewer blooms open at one time, follow the double pinching procedure.

Standards are usually pinched once to induce breaks so that they may be grown two per plant. The strongest breaks are selected and all others removed. It is well to pinch on the date suggested in the general list. Careful observation has shown us that neckiness with some varieties is eliminated by pinching on the respective dates. Singles and anemones are usually grown 3 to 4 stems per plant.

Condition of Plant

When pinching, remove only the soft growth, never cut into the woody stems as this will not produce the type of breaks you desire. It is our experience that it is best not to pinch until the plant has become well established in its permanent location. In all cases it is better to have at least eight to ten inches of growth on the plants before pinching. (Photos above.)

When double pinching, pinch the first time 30 days before the "Last Pinch". This allows enough time to produce a growth long enough to pinch at the proper time.

If by chance you are delayed in planting and your plants will be too tall, it is advisable to pinch early enough before benching so that the breaks will be several inches long at time of planting. Never pinch hard plants at the same time they are planted into the bench, a heavy loss may result. Better wait until plants are established, then pinch.

The last pinching dates given after each variety will help you grow that variety to excellency. Remember that pinching is just one cultural factor and will only function when all other cultural points are carried out properly.



Well Established Young Plant



Top Several Inches Removed



Strong Breaks Resulting from Single Pinch



Cultural Pointers



Early or Crown bud surrounded by lateral buds



Late or Terminal bud surrounded by flower buds



Late or Terminal bud selected

DISBUDDING

Large flowered varieties produce side shoots in the axils of the leaves which should be removed very close to the base at regular weekly intervals. Disbuds are handled the same as standards.

Taking Bud

The chrysanthemum usually produces two distinct types of flowering buds—Crown and Terminal. The first bud produced is called the crown bud and is distinguished by being surrounded by other lateral leaf buds. The second is the terminal bud and is surrounded by several flower buds. If the plant is planted especially early, a second crown bud might appear. In appearance this second crown bud is exactly the same as the first.

The procedure of "Taking Bud" depends very largely on the variety. Usually the safest rule to follow is not to select a bud on early or midseason varieties before August 25 and never select a crown bud on late flowering varieties. In our list of large flowered varieties under "Select Bud" you will find the date on which to select the proper bud. If bud is selected too early a large percentage of the flowers will be crippled.

The formation of the crown bud usually does not take place when growing according to the "Time Pinch Plan".

The final selection of bud should not be made when the cluster buds are too small as this will very likely cause injury to the stem near the bloom. Likewise it is not advisable to delay selecting the bud too long. Some growers like to leave an alternate bud until they are certain that nothing will happen to the one finally selected.

DISBUDDED SPRAYS

The procedure in growing disbudded sprays, is to wait until the crown bud forms, then remove all vegetative shoots but three. Later when terminal buds appear disbud each shoot similar to the normal disbudding of standards. When the blooms mature there are three flowers on each spray. In singles and anemones, the size of the blooms will be a trifle smaller than when they are grown as one flower per stem. Raise three stems per plant similar to straight disbuds. Varieties such as Goldsmith, Valencia, Europa, etc., can be grown as disbudded sprays.

Good Chrysanthemums result from the careful and thorough practice of the basic principles of plant growth, plus the acknowledgment of certain differences in the nature of various varieties. Growing disbudded sprays is a modification in culture which is very much worthwhile.

Gloectner

Cultural Pointers

WATERING

The knowledge of proper watering is essential to success. Chrysanthemums produce extremely heavy foliage and a great deal of water is required at the roots, and under ordinary conditions of bench culture overwatering would be difficult. When grown in beds more care should be exercised in watering. After benching young plants grown in 2¼" pots, spot watering around the plants is more desirable than watering the entire area. When the plants become established the entire area should be given a thorough watering. A trowel should be used to examine the soil to determine the necessity of watering. Some soils look wet on the surface but are very dry several inches below.

When planting rooted cuttings directly into their permanent locations it is essential to water thoroughly to set the soil around the plant roots. We suggest double watering again when the soil gets on the dry side. By this time the plants are established and regular watering should be followed. Keep humidity in the house by wetting down bench and walks.

Leaching

Many greenhouse soils are excessively rich and chrysanthemums will not thrive in such a medium. If this is the case, the remedy is leaching with water. After the soil is sterilized it should be leached. Use a skinner line and allow it to run for hours if necessary. Raised benches do not require as much water to leach.

Syringing

During the heat of the summer it is beneficial to syringe or spray the foliage of chrysanthemums. When syringing is started around 8:00 A.M. and continued at regular intervals, with the help of a light shade on the glass, the house temperature can be kept down and the humidity raised within the house. When the growth becomes thick or when the nights get chilly discontinue all syringing. Some growers who grow quality mums tell us that they do not syringe their crop during the entire season.

TEMPERATURE

This crop will make its most growth during cool weather. During the summer, syringing overhead plus a light shade on the glass will help keep the plants cool.

Blindness

Blindness may be a combination of late planting, late pinching, too much moisture, too rich a soil and too low a temperature at bud initiation. It has been shown that if chrysanthemums are grown in temperatures much below 50° at the time of bud initiation the plants will remain vegetative and will not form flower buds. Blindness is usually associated with those varieties which flower the latter part of November or later. Not all varieties initiate buds at the same date. The late flowering varieties may not set bud until October.

To overcome blind growth keep a night temperature of 55 - 60° from September 15 on until the buds are visible. Likewise run the soil moisture low and do not feed during this period. After the buds are visible it is safe to reduce the temperature to 50°.

When growing chrysanthemums "The Year Around" it is very important to maintain a temperature of 60° during the period of bud formation or blindness and poor budding will result.

**Verticillium Wilt Showing Wilting
of Lower Leaves**





Cultural Pointers

CUTTING FLOWERS

Quality flowers can be easily ruined by improper cutting and marketing. Standards should have their centers well developed before cutting as half open blooms will not have good keeping qualities. Pompons are ready to cut when the majority of the buds on the spray are open. If pompons are allowed to remain on the plant too long the quality is greatly reduced. There is also a great difference in weight of pompons cut when ready as compared with those held on the plant for some time before cutting. The Chrysanthemum Society of America recommends that pompons be marketed in 9 ounce bunches. Pompons should be bunched in neat uniform bunches with the blooms on one plane and the stems all cut to one length. Tie the bunch lightly at the top and firmly at the base with string to prevent the flower heads from tangling with other bunches when handled.

There is a possibility of marketing pompons by the dozen stems provided a uniform spray can be grown by following the precision growing procedure.

SHIPPING FLOWERS

Packing of cut flowers should be carefully studied. The most common error is over-crowding in the shipping boxes. Not securely fastening the blooms in the box will cause bruising of the petals. Cleating or sewing the stems to the box is essential. Cushion the blooms by placing enough padded paper on the bottom of the corrugated box and between the layers of blooms. Wrap the pompons with a loose wrapper. The wrapping paper could have the name of the grower printed on it. Long distance shipments carry better if the cut flowers are packed dry. Reduction of temperature is accomplished by precooling the packed cut flowers.

CULTURED STOCK

Through the development of science your chrysanthemum cuttings have all been grown from stock that has been cultured to determine the presence or absence of the fungus that causes Verticillium Wilt or more commonly referred to as Seidewitz Disease. The culturing of cuttings is to place bits of the stem of a cutting into the gelatine-like agar medium which is used for growing fungi. If the tissue is not infected, no growth of Verticillium develops. As each cutting is cultured it is placed in sterile propagating benches spaced six inches each way. After 10 days of incubating the agar plates one can determine if the wilt organism is present in the tissue. All the cuttings that show the presence of Verticillium are discarded and only those that show a negative reading are saved and grown into stock plants. This clean stock must be grown under sterile conditions at all times as cuttings can be easily contaminated when planted into soil that has the Verticillium organism present.

Verticillium wilt undoubtedly is the worst disease of the Chrysanthemum. If you obtain cuttings propagated from cultured stock and provided you grow your plants in clean soil this disease should not be of any trouble to you.



Stock Plants Growing Under Additional Light



Well Packed Box

Gloeckner

Cultural Pointers

Supporting

Standards and disbuds are usually staked up by means of a support, starting when the plants are a foot high. The simplest method is to run a wire overhead along each row and tie a string from the base of the plant to this wire. This method eliminates the need of tying the stem at intervals to the support since the string may be twined in and out of the leaves of the stem. The quickest means of support is the use of galvanized wire stakes, which are fastened by patented clips to the wire overhead. Several string ties are necessary to keep the stem in position. In some cases the same type of support that is used in supporting carnations with wire and string has been used satisfactorily.

Pompons are usually supported by the string and wire method similar to that used for snapdragons and carnations. Two layers of wires are necessary to give the pompons good support. When growing out of doors or in cloth houses heavier wire is necessary to give proper support because moisture often collects in the open blooms accounting for the extra weight requiring very strong supports.

Cleaning Spray Equipment

For efficiency of all mechanical items cleanliness is the final word. To avoid contamination and reducing the effectiveness of spray materials keep your sprayer and hose lines clean. After each spraying clean out the sprayer with hot water and allow to run through the pump and hose line. It is best to empty the sprayer after you are through spraying as many materials change chemically if allowed to stand in the sprayer.

Scum deposits are frequently found in sprayers and to remove, add 1 pound of tri-sodium phosphate to 25 gallons of hot water and allow the solution to run through the tank into the hose and back into the tank for 30 to 40 minutes. Empty out the tri-sodium phosphate solution and run clean water through the spray to remove the cleaner. Do this every two or three months depending on the condition of the sprayer.



Power Sprayer Is Necessary For Thorough Coverage



Spring Flowered Chrysanthemums

Chrysanthemums can be produced at any time of year, providing day length, temperature, insects and diseases are controlled correctly. Our research workers in various federal and state institutions have shown us that chrysanthemums can be flowered the year around. The chrysanthemum has great variety of colors and types and also has excellent keeping quality. Both the retailer and consumer are interested in this and they will welcome the addition of chrysanthemums the year around.

Season has been eliminated and the flowering time can be accurately controlled. You can use varieties that are best for your market. Some varieties are excellent for the August to November bloom but are worthless during the winter and spring months because of the poor light intensity at that time.

Daylength Control

It has been known that the days are short enough for bud formation around September 1. This will vary somewhat depending upon your location in the States. To prevent flower buds from forming it is desirable to lengthen the day with additional light starting August 15. When one is using black cloth to reduce the length of the day the treatment can be discontinued September 1.

Similarly in the spring the days are too long for further bud formation starting April 15. To prevent bud formation light the plants until April 20. If you want bud formation start shading March 15, or a little earlier if you are in the extreme southern states.

Black Cloth

If you are using black cloth during the period from March 15 to July 25 be sure to have opaque cloth so that very little light passes through the cloth. Cloth that has been previously used very likely will not be dark enough, so make tests with a light meter before using. Heavy canvas dyed a dark color has proven to be satisfactory.

Amount of Additional Light

The use of 100 watt lamps with reflectors spaced at six foot intervals, three feet above the plants, is sufficient light to prohibit bud formation. Light should be applied from midnight to 12:30 a.m. from August 15 to September 1 and February 15 to April 15. During the period from September 1 to February 15 it is necessary to use four hours of additional illumination from midnight to 4:00 a.m. or if convenient from 6:00 p.m. to 10:00 p.m. each evening.

Temperature Control

For bud formation a minimum temperature of 60 degrees should be maintained. During the period of elongation or where bud formation is not wanted a night temperature near 55 degrees is ideal but some investigators find that 50 degrees is satisfactory. When black cloth is started raise the night temperature to 60 degrees until color shows, and then it can be lowered.

When growing a single bench of pompons in a cool house it has been a problem how to increase the temperature necessary for bud set. A simple method is when applying black cloth allow the cloth to drop to the floor on each side of the bench. Turn on the heat lines under that bench and you will find that a 60 to 65 degree temperature can be maintained.

Timing

Rooted cuttings previously grown under additional light should be planted directly into the permanent location and pinched 21 days later. A soft pinch should be made. The period of elongation or the period which must have additional light will vary with the planting date. October planted cuttings will require a longer period to attain their desired height as compared with February planted cuttings. Therefore, we have added a schedule of spring flowering chrysanthemums. In this schedule you will find the date of planting, the date of pinch, which in all cases is 21 days after planting. The date the lights should be off as well as the shading date are found in this schedule. Remember to apply additional light from the day you plant until the respective date given under the heading **Lights Off**.

Varieties

At present the pompon, single and anemone spray type varieties respond the best. Standards often times mature with poor flower heads. The pompon varieties will also net you a greater return. The varieties found in the schedule are the best for the respective flowering periods.



Schedule of Spring Flowering Chrysanthemums

PLANT OCTOBER 10	PINCH NOVEMBER 1	LIGHTS OFF JANUARY 12	SHADE	} FLOWER MARCH 15-24
VARIETIES: Gold Coast, Golden Herald, Yel. Arcadia, Pinocchio, Arcadia, Pink Dot.				
PLANT OCTOBER 20	PINCH NOVEMBER 10	LIGHTS OFF JANUARY 22	SHADE	} FLOWER MARCH 25 APRIL 4
VARIETIES: Gold Coast, Golden Herald, Yel. Arcadia, Pinocchio, Arcadia, Pink Dot.				
PLANT OCTOBER 30	PINCH NOVEMBER 20	LIGHTS OFF FEBRUARY 1	SHADE	} FLOWER APRIL 5-14
VARIETIES: Gold Coast, Golden Herald, Yel. Arcadia, Pinocchio, Arcadia, Pink Dot.				
PLANT OCTOBER 19	PINCH NOVEMBER 9	LIGHTS OFF JANUARY 27	SHADE	} FLOWER APRIL 5-14
VARIETIES: Barcarole, Pixie, Wh. Mensa, Masterpiece, Br. Masterpiece, Cassandra.				
PLANT NOVEMBER 8	PINCH NOVEMBER 29	LIGHTS OFF FEBRUARY 11	SHADE	} FLOWER APRIL 15-24
VARIETIES: Gold Coast, Golden Herald, Yel. Arcadia, Pinocchio, Arcadia, Pink Dot.				
PLANT OCTOBER 31	PINCH NOVEMBER 21	LIGHTS OFF FEBRUARY 6	SHADE MARCH 15	} FLOWER APRIL 25 MAY 4
VARIETIES: Barcarole, Pixie, Wh. Mensa, Masterpiece, Br. Masterpiece, Cassandra.				
PLANT NOVEMBER 28	PINCH DECEMBER 19	LIGHTS OFF FEBRUARY 26	SHADE	} FLOWER APRIL 25 MAY 4
VARIETIES: Captain Cook.				
PLANT NOVEMBER 21	PINCH DECEMBER 12	LIGHTS OFF FEBRUARY 21	SHADE MARCH 15	} FLOWER APRIL 25 MAY 4
VARIETIES: Gold Coast, Golden Herald, Yel. Arcadia, Pinocchio, Arcadia, Pink Dot.				
PLANT NOVEMBER 15	PINCH DECEMBER 6	LIGHTS OFF FEBRUARY 16	SHADE MARCH 15	} FLOWER MAY 5-14
VARIETIES: Barcarole, Pixie, Wh. Mensa, Masterpiece, Br. Masterpiece, Cassandra.				
PLANT DECEMBER 12	PINCH JANUARY 2	LIGHTS OFF MARCH 8	SHADE MARCH 15	} FLOWER MAY 5-14
VARIETIES: Minong, Captain Cook.				
PLANT DECEMBER 5	PINCH DECEMBER 26	LIGHTS OFF MARCH 3	SHADE MARCH 15	} FLOWER MAY 5-14
VARIETIES: Gold Coast, Golden Herald, Yel. Arcadia, Pinocchio, Arcadia, Pink Dot.				
PLANT NOVEMBER 27	PINCH DECEMBER 18	LIGHTS OFF FEBRUARY 25	SHADE MARCH 15	} FLOWER MAY 5-14
VARIETIES: Barcarole, Pixie, Constellation, Sunray, Wh. Mensa, Masterpiece, Cassandra, Br. Masterpiece.				

REMEMBER TO APPLY ADDITIONAL LIGHT FROM THE DAY YOU PLANT UNTIL THE RESPECTIVE DATE GIVEN UNDER THE HEADING *LIGHTS OFF*.



Schedule of Spring Flowering Chrysanthemums

PLANT DECEMBER 25	PINCH JANUARY 15	LIGHTS OFF MARCH 18	SHADE MARCH 18	FLOWER MAY 15-24
VARIETIES: Minong, Captain Cook.				
PLANT DECEMBER 18	PINCH JANUARY 8	LIGHTS OFF MARCH 13	SHADE MARCH 13	
VARIETIES: Gold Coast, Golden Herald, Yel. Arcadia, Pinocchio, Arcadia, Pink Dot.				FLOWER MAY 15-24
PLANT DECEMBER 12	PINCH JANUARY 2	LIGHTS OFF MARCH 8	SHADE MARCH 8	
VARIETIES: Barcarole, Pixie, Constellation, Sunray, Wh. Mensa, Masterpiece, Cassandra, Br. Masterpiece.				
PLANT JANUARY 8	PINCH JANUARY 29	LIGHTS OFF MARCH 28	SHADE MARCH 28	FLOWER MAY 25 JUNE 4
VARIETIES: Minong, Captain Cook.				
PLANT JANUARY 1	PINCH JANUARY 22	LIGHTS OFF MARCH 23	SHADE MARCH 23	
VARIETIES: Gold Coast, Golden Herald, Yel. Arcadia, Pinocchio, Arcadia, Pink Dot.				FLOWER MAY 25 JUNE 4
PLANT DECEMBER 25	PINCH JANUARY 15	LIGHTS OFF MARCH 18	SHADE MARCH 18	
VARIETIES: Barcarole, Pixie, Constellation, Sunray, Wh. Mensa, Masterpiece, Cassandra, Br. Masterpiece.				
PLANT JANUARY 24	PINCH FEBRUARY 14	LIGHTS OFF APRIL 8	SHADE APRIL 8	FLOWER JUNE 5-14
VARIETIES: Minong, Captain Cook.				
PLANT JANUARY 17	PINCH FEBRUARY 7	LIGHTS OFF APRIL 3	SHADE APRIL 3	
VARIETIES: Gold Coast, Golden Herald, Yel. Arcadia, Yel. Daisy, Pinocchio, Arcadia, Pink Dot, Oct. Pink.				FLOWER JUNE 5-14
PLANT JANUARY 10	PINCH JANUARY 31	LIGHTS OFF MARCH 29	SHADE MARCH 29	
VARIETIES: Barcarole, Pixie, Constellation, Sunray, Wh. Mensa, Masterpiece, Cassandra, Br. Masterpiece.				
PLANT FEBRUARY 7	PINCH FEBRUARY 28	LIGHTS OFF APRIL 18	SHADE APRIL 18	FLOWER JUNE 15-24
VARIETIES: Minong, Wh. Jewell, Jewell, Caroline Yosick, Captain Cook.				
PLANT JANUARY 31	PINCH FEBRUARY 21	LIGHTS OFF APRIL 13	SHADE APRIL 13	
VARIETIES: Gold Coast, Golden Herald, Yel. Arcadia, Yel. Daisy, Yel. Dot, Pinocchio, Arcadia, Pink Dot, Oct. Pink.				FLOWER JUNE 15-24
PLANT JANUARY 24	PINCH FEBRUARY 14	LIGHTS OFF APRIL 8	SHADE APRIL 8	
VARIETIES: Barcarole, Pixie, Constellation, Sunray, Wh. Mensa, Masterpiece, Cassandra, Br. Masterpiece.				

REMEMBER TO APPLY ADDITIONAL LIGHT FROM THE DAY YOU PLANT UNTIL THE RESPECTIVE DATE GIVEN UNDER THE HEADING *LIGHTS OFF*.


 Gleekner

The Use of Black Cloth Shading to Advance the Flowering Season

The commercial use of applying black cloth to advance the flowering season has been used successfully for the past seventeen years. The biggest change has not been in the application of the cloth but has come about with varieties and their culture. The varieties in the following list lend themselves to black cloth shading. The dates opposite the varieties are those found satisfactory when the given blooming date is desired.

USEFUL HINTS

- 1—Use a good durable **Black Cloth** which when applied will reduce the light intensity to 2 foot candles or less. More light intensity than this will result in delayed flowering and unevenness of bloom.
- 2—Plants should be planted 7 weeks before shading date. The Last Pinch should be 35 days before shading date. With some varieties, such as Cassandra and Sea Gull pinch 28 days before shading date. This will make for a better spray formation. Pinch the standards 35 days before shading date. Remember the plants should always be in a very active growing condition when following these suggestions.
- 3—The cloth should be applied at 5 P.M. and removed at 8 A.M. Continue covering each evening on pompons until the latest buds show color and most of the flowers are well developed. For large flowering varieties shading can be discontinued after all flowering buds have attained the diameter of approximately one half inch.
- 4—Be sure that covering is complete on all benches shaded, as any leaks in light will cause uneven spots in the bench at blooming time.
- 5—When shading out of doors or under aster cloth, it has been found that metal clamps similar to those used in battery shops will hold on the black cloth better than clothes pins or safety pins.
- 6—When growing large flowering varieties outdoors give some protection as rain and wind storms play havoc when not protected.
- 7—Best results are obtained when varieties of approximately the same blooming date are used for any one particular shading. When a spread in blooming dates is desired, repeated shading of a few varieties at weekly or ten-day intervals has proven more satisfactory than grouping a large number of varieties into any one shading. The shading dates given are those which have been found to be best for the respective varieties. We recommend benching seven weeks prior to shading.
- 8—Continue to give the plants which are being given the short day treatment the same care as those grown normally. We have collected the data on the ideal time to bench and pinch for the respective dates of bloom when shading is started at various dates. This is found in the tables on the following pages.
- 9—Select the first bud on standard varieties that appears after shading is started.
- 10—Black cloth should be applied each evening although missing one night a week will give fair results but delayed flowering results when cloth is not applied each evening.

As an added suggestion, we would recommend the removal of black cloth after night fall to allow for a better circulation of air. This would prevent the accumulation of dampness and the unfavorable results that usually occur therefrom. This of course will cause considerable extra work as the cloth must be replaced before morning. We feel however, that as this will improve the growth and the foliage it will be well worth the effort. Perfection is never obtained without added effort.



Shading Information

PLANT APRIL 12	PINCH MAY 3	SHADE JUNE 8	FLOWER AUGUST 5-14
VARIETIES: Minong, Wh. Jewell, Jewell, Caroline Yosick, Captain Cook.			
PLANT APRIL 7	PINCH APRIL 28	SHADE JUNE 3	
VARIETIES: Gold Coast, Golden Herald, Yel. Arcadia, Yel. Daisy, Yel. Dot, Pinocchio, Arcadia, Pink Dot, Oct. Pink, Jessie.			FLOWER AUGUST 15-24
PLANT APRIL 1	PINCH APRIL 22	SHADE MAY 29	
VARIETIES: Barcarole, Pixie, Yel. Bushnell, Constellation, Sunray, Nuggets, Wh. Mensa, Dk. Pk. Bulkeley, Cassandra.			
PLANT APRIL 23	PINCH MAY 14	SHADE JUNE 18	FLOWER AUGUST 15-24
VARIETIES: Minong, Wh. Jewell, Jewell, Caroline Yosick, Captain Cook.			
PLANT APRIL 18	PINCH MAY 9	SHADE JUNE 13	
VARIETIES: Gold Coast, Golden Herald, Yel. Arcadia, Yel. Daisy, Yel. Dot, Pinocchio, Arcadia, Pink Dot, Oct. Pink, Jessie, Seneca.			FLOWER AUGUST 25 SEPTEMBER 4
PLANT APRIL 12	PINCH MAY 3	SHADE JUNE 8	
VARIETIES: Barcarole, Pixie, Yel. Bushnell, Constellation, Sunray, Nuggets, Wh. Mensa, Dk. Pk. Bulkeley, Cassandra.			
PLANT MAY 2	PINCH MAY 23	SHADE JUNE 28	FLOWER AUGUST 25 SEPTEMBER 4
VARIETIES: Minong, Wh. Jewell, Jewell, Caroline Yosick, Captain Cook.			
PLANT APRIL 28	PINCH MAY 19	SHADE JUNE 23	
VARIETIES: Gold Coast, Golden Herald, Yel. Arcadia, Yel. Daisy, Yel. Dot, Pinocchio, Arcadia, Pink Dot, Oct. Pink, Jessie, Seneca.			FLOWER SEPTEMBER 5-14
PLANT APRIL 23	PINCH MAY 14	SHADE JUNE 18	
VARIETIES: Barcarole, Pixie, Yel. Bushnell, Constellation, Sunray, Nuggets, Yel. Fellow, Wh. Mensa, Sea Gull, Dk. Pk. Bulkeley, Cassandra, Navaho.			
PLANT MAY 12	PINCH JUNE 2	SHADE JULY 9	FLOWER SEPTEMBER 5-14
VARIETIES: Minong, Wh. Jewell, Jewell, Caroline Yosick, Captain Cook.			

PLANT 7 WEEKS BEFORE SHADING DATE. LAST PINCH 35 DAYS BEFORE SHADING DATE.



Shading Information

PLANT MAY 8 PINCH MAY 29 SHADE JULY 4

VARIETIES: Gold Coast, Golden Herald, Yel. Arcadia, Yel. Daisy, Yel. Dot; Mary L. Hall, Pinocchio, Arcadia, Pink Dot, Oct. Pink, Jessie, Seneca, Fire Bird, Red Daisy.

FLOWER
SEPTEMBER
5-14

PLANT MAY 4 PINCH MAY 25 SHADE JUNE 29

VARIETIES: Barcarole, Pixie, Yel. Bushnell, Constellation, Sunray, Nuggets, Yel. Fellow, Wh. Mensa, Sea Gull, Dk. Pk. Bulkeley, Cassandra.

PLANT MAY 22 PINCH JUNE 12 SHADE JULY 19

VARIETIES: Minong, Wh. Jewell, Jewell, Caroline Yosick, Capt. Cook, Silver Sheen, Pink Chief, Hilda Bergen.

PLANT MAY 17 PINCH JUNE 7 SHADE JULY 14

VARIETIES: Gold Coast, Golden Herald, Yel. Arcadia, Yel. Daisy, Yel. Dot, Pinocchio, Arcadia, Pink Dot, Oct. Pink, Jessie, Seneca, Fire Bird, Red Daisy, Sunglow, Oct. Rose.

FLOWER
SEPTEMBER
15-24

PLANT MAY 13 PINCH JUNE 3 SHADE JULY 9

VARIETIES: Barcarole, Pixie, Yel. Bushnell, Constellation, Sunray, Nuggets, Yel. Fellow, Wh. Mensa, Sea Gull, Little America, Dk. Pk. Bulkeley, Masterpiece, Cassandra, Red Rust, Ind. White, Ind. Pink, Dk. Pk. Orchid Queen, Ind. Yellow.

PLANT MAY 31 PINCH JUNE 21 SHADE JULY 29

VARIETIES: Minong, Wh. Jewell, Jewell, Caroline Yosick, Captain Cook, Silver Sheen, Pink Chief, Hilda Bergen.

PLANT MAY 26 PINCH JUNE 16 SHADE JULY 24

VARIETIES: Gold Coast, Golden Herald, Yel. Arcadia, Yel. Daisy, Yel. Dot, Pinocchio, Arcadia, Pink Dot, Oct. Pink, Jessie, Seneca, Fire Bird, Red Daisy, Sunglow, Albatross, Oct. Rose.

FLOWER
SEPTEMBER 25
OCTOBER 4

PLANT MAY 22 PINCH JUNE 12 SHADE JULY 19

VARIETIES: Barcarole, Pixie, Yel. Bushnell, Constellation, Sunray, Nuggets, Wh. Mensa, Sea Gull, Little America, Dk. Pk. Bulkeley, Masterpiece, Cassandra, Red Rust, Ind. White, Ind. Pink, Dk. Pk. Orchid Queen, Orchid Queen, Ind. Bronze, Ind. Yellow.

PLANT MAY 17 PINCH JUNE 7 SHADE JULY 13

VARIETIES: Princeton, Yel. Fellow, Tally-Ho, Susanne Miller, Seafoam, Priscilla, Vesper, Brocade, Red Princeton, Bittersweet, Mefo, Jean Elizabeth, Mrs. Roy.

FLOWER
SEPTEMBER 25
OCTOBER 4



Shading Information

PLANT JUNE 9	PINCH JUNE 30	SHADE AUGUST 8
-----------------	------------------	-------------------

VARIETIES: Minong, Wh. Jewell, Jewell, Caroline Yosick, Captain Cook, Silver Sheen, Pink Chief, Hilda Bergen.

PLANT JUNE 4	PINCH JUNE 25	SHADE AUGUST 3
-----------------	------------------	-------------------

VARIETIES: Gold Coast, Golden Herald, Yel. Arcadia, Yel. Daisy, Yel. Dot, Pinocchio, Arcadia, Pink Dot, Oct. Pink, Jessie, Fire Bird, Seneca, Red Daisy, Sunglow, Oct. Rose.

PLANT MAY 31	PINCH JUNE 21	SHADE JULY 29
-----------------	------------------	------------------

VARIETIES: Barcarole, Pixie, Yel. Bushnell, Constellation, Sunray, Nuggets, Wh. Mensa, Sea Gull, Little America, Dk. Pk. Bulkeley, Masterpiece, Cassandra, Red Rust, Ind. White, Ind. Pink, Dk. Pk. Orchid Queen, Orchid Queen, Ind. Bronze, Ind. Yellow.

PLANT MAY 26	PINCH JUNE 16	SHADE JULY 23
-----------------	------------------	------------------

VARIETIES: Princeton, Yel. Fellow, Tally-Ho, Susanne Miller, Seafoam, Priscilla, Vesper, Brocade, Red Princeton, Mefo, Jean Elizabeth, Mrs. Roy.

FLOWER
OCTOBER
5-14

PLANT JUNE 17	PINCH JULY 8	SHADE
------------------	-----------------	-------

VARIETIES: Minong, Wh. Jewell, Jewell, Caroline Yosick, Captain Cook, Yel. Ambassador, Mrs. Kidder, Silver Sheen, Ambassador, Pink Chief, Hilda Bergen.

PLANT JUNE 14	PINCH JULY 5	SHADE AUGUST 13
------------------	-----------------	--------------------

VARIETIES: Gold Coast, Golden Herald, Yel. Arcadia, Yel. Daisy, Yel. Dot, Pinocchio, Arcadia, Pink Dot, Oct. Pink, Jessie, Seneca, Fire Bird, Red Daisy, Sunglow, Albatross, Oct. Rose.

PLANT JUNE 10	PINCH JULY 1	SHADE AUGUST 8
------------------	-----------------	-------------------

VARIETIES: Barcarole, Pixie, Yel. Bushnell, Constellation, Sunray, Nuggets, Wh. Mensa, Sea Gull, Little America, Dk. Pk. Bulkeley, Masterpiece, Cassandra, Red Rust, Ind. White, Ind. Pink, Dk. Pk. Orchid Queen, Orchid Queen, Ind. Bronze, Ind. Yellow.

PLANT JUNE 4	PINCH JUNE 25	SHADE AUGUST 2
-----------------	------------------	-------------------

VARIETIES: Princeton, Yel. Fellow, Tally-Ho, Susanne Miller, Seafoam, Priscilla, Vesper, Brocade, Red Princeton, Bittersweet, Mefo, Jean Elizabeth, Mrs. Roy.

FLOWER
OCTOBER
15-24

Gloectner

Extending the Chrysanthemum Season a Short Period by the Use of Lights

To produce high quality standards and singles for the Christmas season it is necessary to grow some of the better November flowering varieties under light to retard blooming. Some growers have made a specialty of producing a quality crop to mature at Christmas or later. Growers in Texas and other southern states find that a short delay in flowering will bring their crop in when they can compete with crops grown in the open in California.

Best results were obtained when the plants were lighted nightly, beginning 2 weeks before the first visible buds. If it is desired to extend the blooming season for short periods of a few weeks, then the light-exposure period each night can be short, not to exceed 60 minutes of light from 40- to 60-watt bulbs spaced 4 to 5 feet apart and 4 feet above the bench. If the blooming season is to be extended further, a longer period of light should be used.

The lights should be discontinued according to the blooming time desired. November 1 to 15 flowering varieties will require 9 weeks after the lights are stopped until blooming, November 15 to 30 flowering varieties require 10 to 11 weeks and those blooming in December, 11 to 12 weeks, depending somewhat upon the temperature maintained in the greenhouse.

USEFUL HINTS

- 1—Select vigorous growing midseason to late-flowering varieties for delayed flowering, such as Indianapolis White, Pink, Bronze and Yellow, Dark Pink Orchid Queen, Orchid Queen, Yellow Queen, Jean Elizabeth, Valencia and its sports.
- 2—Planting date may be several weeks later than when no lights are used. Plant two plants per hill, pinch pompoms once and grow three stems per plant.
- 3—Light with 40- to 60-watt lamps using suitable reflectors hung at four-foot intervals over the bench. Too low a light intensity will not retard bud development.
- 4—Start lights at least 2 weeks before buds are normally visible for the variety, usually not later than August 10th. Starting after this date may cause mal-formed flowers and long necks.
- 5—Use lights EVERY NIGHT at or near midnight, for one hour, when blooming is to be delayed several weeks. Use lights three hours for delaying longer periods.
- 6—Pinch pompoms and disbuds the last time 35 days before the light treatment is discontinued. This will prevent varieties from getting too leggy.
- 7—Night temperatures should be 55 degrees with day temperatures from 10 to 15 degrees higher. Cooler night temperatures will induce blindness.



Proper Lighting For Delayed Flowering



Chrysanthemum Pot Plant Culture

Well grown short pot plants of Chrysanthemums have been finding a ready market in various sections of the country. We feel that many growers have been neglecting this valuable Fall potted plant. In many cases, poor attempts have been made in growing this plant and we offer the following suggestions for your consideration:

VARIETIES—The varieties best suited to pot culture are those which lateral freely and have a medium to low growing habit. A variety whose laterals tend to spread is superior to one with a more upright growth. Good examples are: Bonnaffon De Luxe and Queen of Pinks.

PLANTING—Cuttings may be planted into 2½" pots in May and later shifted into the larger pot for finishing. If this is done care must be used so as not to get the plants hardened too much before shifting. A more efficient and easier way is to set the large pots on the bench, fill them with potting soil and plant the cuttings directly into the finishing pots.

Three cuttings should be planted in a six inch pot while four may be required for a large pot.

WATERING AND HUMIDITY—After planting water thoroughly to set the soil around the plant roots. Repeat this type of watering when the soil gets on the dry side. Organic matter in the soil will facilitate watering and will tend to avoid extreme fluctuations in moisture supply. Keep humidity in house by wetting down bench and walks.

PINCHING—Three pinches are sufficient for a good short compact pot plant. The first pinch should be approximately 15 days after planting. The second pinch about 30 days after planting and the third and last pinch as listed on the chart. Some of the varieties listed grow taller than others, however by observing the last pinching date all the varieties listed should finish reasonably uniform in height.

FERTILIZING—The best program is to have regular soil tests and feed as need is indicated by these tests. In absence of these facilities, and starting with a relatively fertile potting soil, several light feedings should be made with a complete fertilizer such as Electra. This can safely be used at the rate of 1 Teaspoonful per 6" pot. This should be applied when soil is moist and never on a dry soil.

The foliage should retain a bright green lustre throughout the life of the plant, and the lower leaves should never be allowed to lose their color and turn to a light green due to low fertility. A strong well grown pot plant is a well fed plant.

DISEASES AND INSECTS—Pot plants should be sprayed regularly with one of the rotenone insecticides for control of red spider. Pyrethum sprays or **Deenate 50W** will control thrip and leaf tyer. If plants are to be grown outdoors before final potting the foliage should be kept covered with a spray such as Bordeaux Mixture or Fermate to prevent leaf spot. If this is not done considerable foliage loss may result during wet cool weather.

SHADING—Same procedure as for cut flowers. Black cloth should be new or in best of condition for very early shadings to avoid delayed and uneven blooming. When possible take cloth off at night, replacing before daylight. Pinch pot plant varieties the last time the date shading is started.



FOR POT PLANT CONTINUOUS BLOOMING
SCHEDULE SEE PAGE 19 and 20.



Pot Plant Culture Continuous Blooming Schedule

LAST PINCH
JULY 9

SHADE
JULY 9

VARIETIES: Celestra, Mrs. Kidder, Yellow Ambassador, Christina, Ambassador.

LAST PINCH
JULY 4

SHADE
JULY 4

VARIETIES: Golden Glory, Snow White, Granite State, J. W. Prince, Ivanhoe.

LAST PINCH
JUNE 29

SHADE
JUNE 29

VARIETIES: Cardonia, Imp. Honey Dew, Yellow Beauty, Richard Mandel, Little America, Queen of Pinks, Thyra.

FLOWER
SEPTEMBER
5-14

LAST PINCH
JULY 19

SHADE
JULY 19

VARIETIES: Celestra, Mrs. Kidder, Yellow Ambassador, Christina, Ambassador.

LAST PINCH
JULY 14

SHADE
JULY 14

VARIETIES: Golden Glory, Snow White, Granite State, J. W. Prince, Ivanhoe.

LAST PINCH
JULY 9

SHADE
JULY 9

VARIETIES: Cardonia, Imp. Honey Dew, Yellow Beauty, Richard Mandel, Little America, Queen of Pinks, Thyra.

FLOWER
SEPTEMBER
15-24

LAST PINCH
JULY 4

SHADE
JULY 4

VARIETIES: Bonnaffon DeLuxe, Sunray, Helen Frick, Thanksgiving Pink, Orchid Beauty, Gypsy, Red Rolinda, Legal Tender.

LAST PINCH
JULY 29

SHADE
JULY 29

VARIETIES: Celestra, Mrs. Kidder, Yellow Ambassador, Christina, Ambassador.

LAST PINCH
JULY 24

SHADE
JULY 24

VARIETIES: Golden Glory, Snow White, Granite State, J. W. Prince, Ivanhoe.

LAST PINCH
JULY 19

SHADE
JULY 19

VARIETIES: Cardonia, Imp. Honey Dew, Yellow Beauty, Richard Mandel, Little America, Queen of Pinks, Thyra.

FLOWER
SEPTEMBER 25
OCTOBER 4

LAST PINCH
JULY 13

SHADE
JULY 13

VARIETIES: Bonnaffon DeLuxe, Sunray, Helen Frick, Thanksgiving Pink, Orchid Beauty, Gypsy, Red Rolinda, Legal Tender, Beautiful Lady.

PLANT 7 WEEKS BEFORE SHADING DATE.



Pot Plant Culture Continuous Blooming Schedule

LAST PINCH
AUGUST 8

SHADE
AUGUST 8

VARIETIES: Celestra, Mrs. Kidder, Yellow Ambassador, Christina, Ambassador.

LAST PINCH
AUGUST 3

SHADE
AUGUST 3

VARIETIES: Golden Glory, Snow White, Granite State, J. W. Prince, Ivanhoe.

LAST PINCH
JULY 29

SHADE
JULY 29

VARIETIES: Cardonia, Imp. Honey Dew, Yellow Beauty, Richard Mandel, Little America, Queen of Pinks, Thyra.

LAST PINCH
JULY 23

SHADE
JULY 23

VARIETIES: Bonnaffon DeLuxe, Sunray, Helen Frick, Thanksgiving Pink, Orchid Beauty, Gypsy, Red Rolinda, Legal Tender, Beautiful Lady.

FLOWER
OCTOBER
5-14

LAST PINCH
AUGUST 18

SHADE

VARIETIES: Celestra, Mrs. Kidder, Yellow Ambassador, Christina, Ambassador.

LAST PINCH
AUGUST 13

SHADE
AUGUST 13

VARIETIES: Golden Glory, Snow White, Granite State, J. W. Prince, Ivanhoe.

LAST PINCH
AUGUST 8

SHADE
AUGUST 8

VARIETIES: Cardonia, Imp. Honey Dew, Yellow Beauty, Richard Mandel, Little America, Queen of Pinks, Thyra.

FLOWER
OCTOBER
15-24

LAST PINCH
AUGUST 2

SHADE
AUGUST 2

VARIETIES: Bonnaffon DeLuxe, Sunray, Helen Frick, Thanksgiving Pink, Orchid Beauty, Gypsy, Red Rolinda, Legal Tender, Beautiful Lady.

LAST PINCH
AUGUST 23

SHADE

VARIETIES: Golden Glory, Snow White, Granite State, J. W. Prince, Ivanhoe.

LAST PINCH
AUGUST 18

SHADE
AUGUST 18

VARIETIES: Cardonia, Imp. Honey Dew, Yellow Beauty, Richard Mandel, Little America, Queen of Pinks, Thyra.

FLOWER
OCTOBER 25
NOVEMBER 4

LAST PINCH
AUGUST 12

SHADE
AUGUST 12

VARIETIES: Bonnaffon DeLuxe, Sunray, Helen Frick, Thanksgiving Pink, Orchid Beauty, Gypsy, Red Rolinda, Legal Tender, Beautiful Lady.

PLANT 7 WEEKS BEFORE SHADING DATE.



Newer Insecticides

Hexaethyl Tetraphosphate

This new insecticide is available under trade names of **Vapotone**, **Hexcide**, **Blot**, **Kill-Ex** and **Arbortox 64** and very likely many more will be added within the year. **HETP** as it is commonly referred to in the trade is used as a spray or in aerosol dispensers. This new insecticide is extremely effective in killing the active stages of red spider, but little kill on the eggs. This material also gave good control for thrips, leaf tyers, aphids and mealy bugs. Follow the directions of the manufacturer and remember this material kills on contact only so you will have to do a thorough spraying to get good results.

HETP will decompose very rapidly after it is mixed with water, therefore is necessary to use the mixed spray very soon after mixing and never hold over any left over spray mixture. **Precaution** is to spray **HETP** in the morning so the plants will dry off rapidly. In cloudy weather or when the humidity is exceptionally high the foliage will stay moist for three to four hours after spraying a spotting of the leaves will appear on chrysanthemums.

Aerosol bombs are being carefully tried by the U.S.D.A. and excellent control of red spider may be expected by making four applications at three-day intervals. Allow the houses to stay closed for about 1/2 hours after the application. The range of temperature is from 60-90 degrees.

Sodium Selenate

This material has been on the market for the past several years but is comparably new to a large number of growers. This material is applied to the soil and is absorbed by the plant through the roots will kill foliar nematodes, red spider, mites, midge and aphids. Available as **P-40** or as a powder, applications every 3 months are necessary as it leaches from the soil.

P-40 is applied dry at the rate of 3 pounds per 100 square feet of area. Sodium selenate crystals are applied in liquid form and a stock solution is made by dissolving 1 pound in 4 1/2 gallons of water.

For most crops the suggested dosage is 1/4 gram sodium selenate per square foot (equal to 1 pound to 1800 square feet.) Each quart of stock solution contains 25 grams and is therefore enough for 100 square feet of bench surface. It must be diluted with additional water to get even application and good distribution in the soil. Full directions are available with the material.

On chrysanthemums we recommend 1/4 gram sodium selenate per square foot. The safest method is to make two applications at the 1/8 gram rate a week or so apart.

Follow the precautions and syringe off any solution which might get on the foliage. Do not treat plants until 2 or more weeks after transplanting. Be sure to apply the correct amount evenly. Sodium selenate is a poison and treat it as such.

Azobenzene

Dr. W. E. Blauvelt did the earlier research work with this material in controlling red spiders. This material is used primarily as a fumigant but can also be used as a dust. The best method of fumigating is to raise the temperature to 75 degrees for 1 hour before fumigating and raise the humidity by wetting the walks. Quiet weather is desirable for fumigation. There should be a uniform concentration over a long period of time, requiring long intervals between doses. One pound of powder will fumigate 35,000 cubic feet of space. Mix 1 pound of powder with 1 pint of water and paint on as many pipes scattered throughout the house as it will cover. Keep the temperature near 75 degrees for 6 hours and then reduce temperature gradually.

Azofume 45 candles are available now and have given good results for controlling red spiders on carnations and chrysanthemums. It is desirable to use two applications, with the second ten days to two weeks after the original application.

Hypozone 20 contains 20% azobenzene and 10% DDT and is used as a dust. Light dusting applied frequently is most satisfactory. Can be used very effectively as a spot dust.

Benzo-Fume is an azobenzene material available in pressure fumigators similar to **Nicofume Pressure Fumigators** and are applied very similarly. Careful watch on the temperature is necessary as with other azobenzene fumigation.

D. D. T.

This insecticide was used extensively during the recent war. This material is a contact as well as a stomach poison but will not kill red spiders, mealy bugs and aphids. In regards to red spider it has been reported that DDT kills off the parasites of this pest and thus increases the number of spiders.

DDT can be used as a spray or dust. Probably the most common method of application is by spraying using **Deenate 50W** at the rate of 1 1/2 pounds to 100 gallons of water for the control of thrips and leaf tyers. Applied to the soil DDT will control sowbugs, grubs, worms and hold down symphylids. A few varieties of chrysanthemums will show leaf injury. Carnival is one variety that will show this leaf burn.



Insects and Their Control

APHIDS, OR PLANT LICE

All aphids are true sucking insects that insert their beaks through the surface of the leaf or stem and extract the juices from within.

INJURY. The feeding of aphids causes the plants to become sickly and stunted. The leaves curl inward, and when the flower terminal is infested the blooms will be deformed. Certain varieties of chrysanthemums are more susceptible to attack than others.

CONTROL. **Nicofume Fumigation** is the preferred method of control when a considerable number of plants in a house are found to be harboring aphids. **Nicofume Liquid** at the rate of 1-400 plus a soap spreader is also very effective. **Nicotine** dust is very effective against all species of aphids. **NNOR**, and **Loro** are also effective. They should be used as directed on the containers. **Vapotone** is most effective on the straw colored aphids.

CHRYSANTHEMUM LEAF MINER

The larva or maggot disfigures and weakens chrysanthemum plants by mining in the leaves. It may do considerable harm to the crop, but is easily held in check.

INJURY. The young maggots burrow in the leaf tissue, leaving the upper and lower surfaces intact. The tunnels are irregular and winding. White blotches are thus formed, which later turn brown, and the leaves may die.

CONTROL. As soon as it is noticed that any leaves are infested, they should be picked off and burned. **Nicofume** spray will kill most of the maggots before they have time to do much damage.

CHRYSANTHEMUM MIDGE

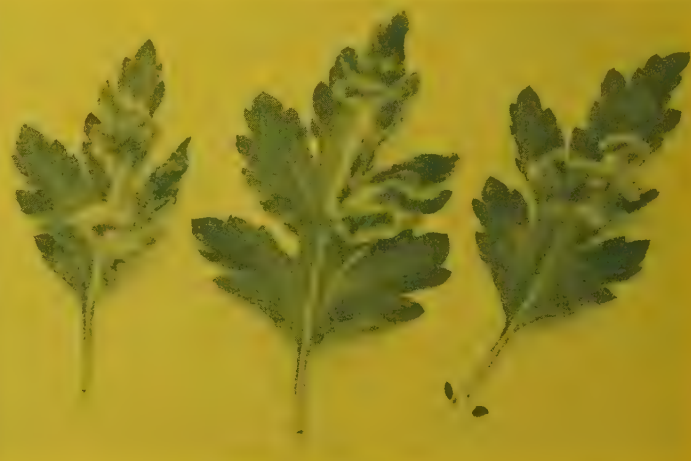
The chrysanthemum midge is one of the most serious pests with which the grower has to deal. Under optimum conditions a little over a month is required to complete the life cycle from the egg to the adult. The eggs are reddish-orange in color and are usually deposited on the tender tips of the growth. Under favorable conditions, the eggs hatch in about three days. The larva wanders about over the surface of the leaf for a day or two before finally penetrating into the leaf.

INJURY. The midge attacks all parts of the plant but prefers the tender growth. If the infestation takes place when the plants are small, they fail to grow, although if the plants are well developed when the infestation starts, the buds blight or are deformed and the plant is rendered unsalable.

CONTROL. Clean stock should be used wherever possible. Severely infested plants should be pulled up and burned. Nightly fumigation with **Calcium cyanide** or **Nicofume** pressure fumigators for 28 consecutive days will give good control. **Loro** 1-800 plus **DuPont Spreader Sticker** 1-1200 sprayed every three days for 3 weeks then every week has proven to be one of the best controls. **Nicotine Dust** is also useful in keeping the plants covered and is especially useful when used in combination with fumigation. **Sodium selenate** is effective when applied in liquid form $\frac{1}{4}$ gram per square foot after plants are well established.



Aphids



Leaf Miner Injury



Insects and Their Control

CORN EAR WORM

The corn ear worm is a green to brown, nearly smooth caterpillar, often mistaken for a cutworm when found within the buds or on the open flowers.

INJURY. It is very destructive to the opening buds, for it feeds on their petals and other parts, deforming if not entirely ruining the flowers.

CONTROL. If the attacked plants are blooming, spraying is out of the question, but thorough treatment with a 3 or 5% **D.D.T.** dust is recommended. After they have worked their way into the buds and are found to be feeding on the open flowers, hand-picking is the only remedy. Spraying the plants with **Deenate 50W** will control them before the color shows.

CUTWORMS

The larva is dull-colored and from one to more than two inches in length. They are most active at night, and usually spend the day coiled up just under the surface of the soil at the base of the plant. They should not be confused with the corn ear worm which cannot be controlled by poison baits.

INJURY. Cutworms obtain their food by biting out sections of the leaf, stem or bud. Various species attack different parts of the plant. The one that is most damaging climbs to the top of the stem and eats into the flower buds.

CONTROL. Those cutworms that feed on the foliage can best be controlled with **Deenate 50W** spray using 1½ pounds to 100 gallons of water. Cutworms are also controlled with a **poison bran bait** which should be distributed very thinly over the bench several consecutive nights. Poison bait formula consists of 5 pounds of wheat bran, enough water to moisten mash, 4 ounces of Paris Green, 1 pint of molasses and one finely chopped lemon.

GREENHOUSE LEAF TYER

It gets its name from its habit of spinning light webs inclosing two or more leaves or tying together the parts of a single leaf. This caterpillar is very active, and when disturbed will wriggle off the leaf, often backwards, lowering itself on a silk-like strand.

INJURY. When first hatched, the larvae eat out shallow holes on the under side of the leaves. As they grow, they enlarge these holes but usually do not cut through to the upper surface. The result is that the leaves become skeletonized.

CONTROL. The best poison to control the larvae is **Deenate 50W**, either in the form of a dust or a spray. For liquid spray use 1½ pounds of **Deenate 50W** to 100 gallons of water. Leaf tyers can also be controlled with **tartar emetic**. Add two pounds of tartar emetic, 4 pounds of sugar to 100 gallons of water. Spray the plants thoroughly so that the entire plant is covered. Pyrethrum sprays such as **Evergreen**, **Red Arrow Special**, **New Libersol**, and **Yamttox** will kill the worms and not discolor the foliage.



Corn Ear Worm Damage



Leaf Tyer



Insects and Their Control

MEALY BUGS

Mealybugs are small, sluggish, whitish, soft bodied insects, measuring up to $\frac{1}{4}$ inch long, found in clusters on the undersides of the leaves or in the leaf axils.

INJURY. This pest sucks the juices from the stems and leaves, discoloring and deforming the foliage.

CONTROL. Regular fumigations with **Calcium Cyanide** will aid in keeping mealybugs in check. The combination of **Greenhouse Volck** 1-50 and **Nicofume** liquid 1-400 when applied when temperatures are below 90 degrees will give good results. **Loro** 1-800 and **DuPont Spreader Sticker** 1-1200 if sprayed when temperatures are not too high is very effective. The old method of syringing with water is still one of the easiest ways to keep the plants free of this insect.

MITES

Cyclamen mite and broad mite are often found on the same plants at the same time. Broad mite could pass through a complete generation in 4 to 5 days at 70 to 80 degrees while the Cyclamen mite will take 4 to 5 times longer.

INJURY. Infested leaves become deformed, curl from the outside inward, and wrinkle so that pockets and pit-like depressions are formed. When the infestation is severe, the mites collect about the buds, causing them to blight.

CONTROL. **Vapotone** containing **HETP** has given good control. **Thiocide** 1-200 and **DuPont Spreader Sticker** 1-800 is an effective control measure. We recommend spraying every week or ten days during the growing season. **Nicotine liquid** 1-400 plus spreader, **NNOR** may also be used and will give fair control. **Sodium Selenate** is effective when applied in liquid form $\frac{1}{4}$ gram per square foot after plants are well established.

RED SPIDERS

There are several species of red spiders that attack the chrysanthemum. They vary in color through yellow, orange and red. The body is oval in outline and bears eight well-developed legs.

INJURY. Red spiders pierce the epidermis of the leaf and draw the liquid contents from the cells, causing the leaf to turn pale around the injured portion. They prefer to collect on the under surfaces of the leaves, which they cover with silken threads.

CONTROL. **HETP** containing insecticides such as **Vapotone** or **Hexcide** are by far the most effective on red spider. Spray thoroughly and heavily with **Yamtox** or some rotenone sprays as **NNOR**, **L333**, **OPTOX** at intervals of five days until the spider is cleaned up. Moisture is detrimental to the development of the red spiders and frequent syringing washes them and their eggs off the plants. **Loro** 1-800 plus **DuPont Spreader Sticker** 1-1200 has given good control but should be applied with caution as it will injure foliage when temperatures are high. **Sodium selenate** is effective when applied in liquid form $\frac{1}{4}$ gram per square foot after plants are well established.

SYMPHYLIDS

Symphylids are small white creatures about $\frac{1}{8}$ to $\frac{3}{16}$ inches long. About 40-60 days are necessary for the completion of the life cycle.

INJURY. Symphylids destroy the fine root hairs and small rootlets, thus stunting the plants and often killing them outright.

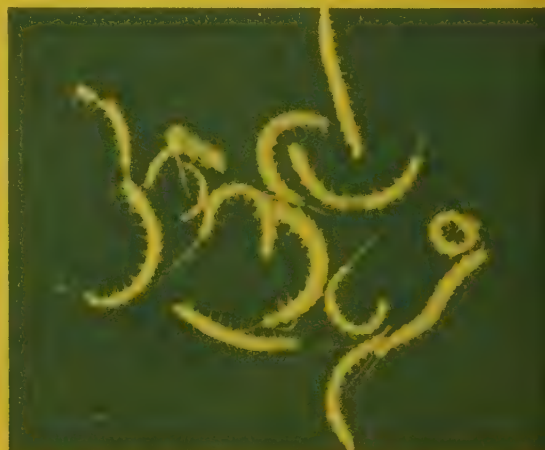
CONTROL. If possible construct raised bench. Steam sterilization has given fair control. **Dowfume G** and the new **Greenhouse Isotox Dust** are giving excellent control of this pest.



Red Spider Injury



Mealy Bugs



Symphylids Enlarged 10x

Gleekne

Insects and Their Control

SOWBUGS

INJURY. Sowbugs often become so plentiful in the greenhouse that they eat the newly planted cuttings at the base.

CONTROL. Any of the many poison baits will give partial control but a complete spraying under the benches has given excellent control. **Arbortox No. 7** or **Deenate 50W** will give complete control.

TARNISHED PLANT BUGS

The tarnished plant bug or sting fly comes into the greenhouse through open doors and ventilators in late summer or early fall and does considerable harm to this crop. Chrysanthemums growing in the open are frequently affected. Varieties such as Mary L. Hall and Sea Gull are attacked to a greater extent than other varieties.

INJURY. It has sucking mouthparts and obtains its food by inserting its long, slender beak into the plant tissues and sucking up the contents of the injured cells, apparently injecting saliva, which causes the death of the tissue in the immediate vicinity. The stem is often slightly bent and the terminal growth is malformed because of this injection.

CONTROL. Early morning spraying or dusting with any of the pyrethrum materials will kill those bugs that are present but this will have to be done each day for complete eradication. **Deenate 50W** has been giving fair control but again this insecticide is best used as a contact.

THRIPS

The chrysanthemum is usually attacked by one or more species of thrips. These small, narrow-bodied, active insects which range in color from yellow to brown or almost black, injure both the leaves and the blossoms.

INJURY. Thrips have mouth parts that are fitted for piercing and scraping the leaf surface and for sucking the juices and other cell contents. The upper surface of the foliage is covered with whitish blotches while minute black specks appear on the lower surface. Unless a constant watch is kept on the plants, and control measures properly executed, thrips are capable of causing severe injury within a short time.

CONTROL. **Deenate 50W** used at the rate of 1-1½ pounds to 100 gallons of water is the most effective control known. Other insecticides containing **D.D.T.** are also recommended. **Greenhouse Iso-tox Dust** is also very effective.



Tarnished Plant Bug



Thrip Injury



Pests and Their Control

FOLIAR NEMATODE

The spread of this pest has been very rapid in recent years owing to the increased trade in chrysanthemums, and the ease with which the nematode is transported in plants and cuttings. Too few growers have become familiar with this pest and consequently no effort has been put forth to control it.

SYMPTOMS. The leaves attacked become blotched, turn at first greenish-yellow, then brownish, later gray and finally black until the entire leaf dies and hangs down on the stem. Under conditions of high humidity both in the open during a wet season and under glass owing to excessive watering, the spread of the pest may be extremely rapid.

CONTROL. **Sodium Selenate** applied in liquid form to the soil at the rate of $\frac{1}{4}$ gram per square foot of bed area is the most satisfactory control. Dissolve 1 pound of sodium selenate into $4\frac{1}{2}$ gallons of water, then take one quart of this stock solution and add to 25 gallons of water and this should be applied on 100 square feet of bench surface. One pound of sodium selenate will treat 1800 square feet. The safest method is to make 2 applications at the $\frac{1}{8}$ gram rate a week or so apart. **P40** applied at the rate of 3 pounds per 100 square feet has given fair control. Wait 2 to 4 weeks after benching before applying. This chemical may burn some varieties.

MILDEW

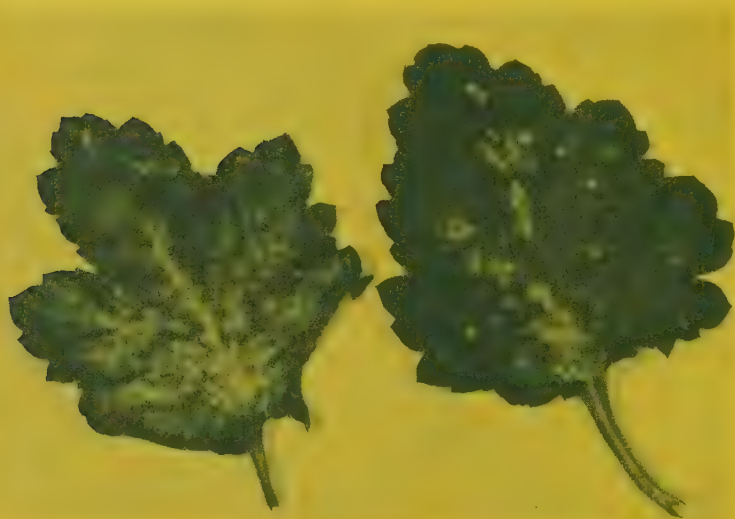
SYMPTOMS. Whitish powdery growth on upper surface of leaves.

CONTROL. Spray at regular weekly intervals with a good **Wettable Sulfur**, 1 lb. per 100 gallons of water to which a good commercial spreader has been added. **Fermate**, 1 ounce to 4 gallons of water is effective.

ROOT KNOT NEMATODE

SYMPTOMS. The nematodes or eelworms bore into the roots of the plants and cause knots or galls to develop on the root systems. As a result the plants are weak, yellowish and stunted in growth.

CONTROL. Steam sterilization of the soil is very effective in eliminating the nematodes. **Dowfume G** is a good soil fumigation that will kill nematodes and not do any damage to the surrounding plants.



Mildew



Dodder Growing on Mums



Diseases and Their Control

ROOT ROT

SYMPTOMS. Entire plant will wilt and recover during the evening. Foliage turns yellow, plant will die in a very short time. A number of soil borne organisms cause the loss of the roots.

CONTROL. Do not plant cuttings that have been infected with damping off. Use sterilized soil. Remove all affected plants when noticed. Do not keep the soil too moist.

RUST

SYMPTOMS. Chocolate brown powdery pustules on the lower surface of the leaves

CONTROL. *Fermate*, 1 ounce to 4 gallons of water is most effective.

SEPTORIA LEAF SPOT OR LEAF BLIGHT

SYMPTOMS. Distinct circular spots on the leaves. These are greyish brown in color and become brittle in the center. Affected leaves may turn yellow and die. More prevalent in the open. Some varieties are more susceptible than others. Sea Gull is very susceptible.

CONTROL. When cuttings are received dunk roots and tops into *Fermate* (2 tablespoonsful to a gallon). Spray the plants with *Fermate* 1 ounce to 4 gallons water plus $\frac{1}{3}$ teaspoonful of *DuPont Spreader Sticker* every ten to fourteen days. Cloth house mums should be kept covered until the buds can be seen. May we recommend that you add the sticker and a little water into a jar then add the *Fermate* and shake thoroughly. Then dump *Fermate* from the jar into sprayer with proper amount of water.

VERTICILLIUM WILT OR SEIDEWITZ DISEASE

SYMPTOMS. Margins of leaves turn yellow and eventually wilt or dry up. This begins at base of plant and works up the stems. May affect one side of a stem or plant more than the other. No distinct spots. Varieties vary in resistance to this disease.

CONTROL. Verticillium wilt can be avoided by purchasing our disease free cuttings produced from cultured stock. It is also necessary to plant only into sterilized soil.

DODDER

SYMPTOMS. Dodder is a parasitic twiner, bearing clusters of small flowers. They are leafless annuals, with very slender yellow, white or red stems, which become attached to the plant by means of root-like suckers. Dodder is occasionally found on chrysanthemums and will cause a complete loss of crop.

CONTROL. Dodder is common in low, weedy places and may be carried into the greenhouse in the soil or manure. Soil sterilization is the only prevention. After dodder is attached to the plants remove the affected plants and burn.



Rust on Chrysanthemum

Septoria Leaf Spot



Pests and Their Control

Dilution Table for Liquid Spray Materials

For measuring small amounts of liquids have a set of household measuring spoons, and a glass graduate marked in fluid ounces or a glass measuring cup marked in quarters and thirds.

1 pint = 16 fluid ounces (fl. oz.)

1 cupful = 8 fl. oz.

1 fl. oz. = 2 tablespoonfuls (tblsp.)

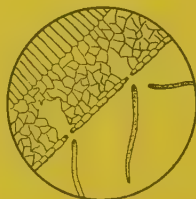
1 tblsp. = 3 teaspoonfuls (tsp.)

Recommended Dilution	Amount to use for the following quantities of spray					
	1 gallon	3 gallons	10 gallons	20 gallons	50 gallons	100 gallons
1 to 50	2½ fl. oz.	8 fl. oz.	1½ pt.	3 pint	1 gal.	2 gal.
1 to 100	1¼ fl. oz.	4 fl. oz.	13 fl. oz.	1½ pint	2 qt.	1 gal.
1 to 200	4 tsp.	2 fl. oz.	6½ fl. oz.	13 fl. oz.	1 qt.	2 qt.
1 to 400	2 tsp.	1 fl. oz.	3¼ fl. oz.	6½ fl. oz.	1 pint	1 qt.
1 to 600	1¼ tsp.	4 tsp.	2 fl. oz.	4½ fl. oz.	11 fl. oz.	1½ pt.
1 to 800	1 tsp.	1 tblsp.	1⅔ fl. oz.	3¼ fl. oz.	8 fl. oz.	1 pt.
1 to 1000	¾ tsp.	2¼ tsp.	1¼ fl. oz.	2½ fl. oz.	6½ fl. oz.	13 fl. oz.
1 to 1600	½ tsp.	1½ tsp.	¾ fl. oz.	1⅔ fl. oz.	4 fl. oz.	8 fl. oz.
1 to 2000	⅓ tsp.	1 tsp.	⅔ fl. oz.	1¼ fl. oz.	3¼ fl. oz.	6¼ fl. oz.

BIOLOGY OF THE FOLIAR NEMATODE



Eelworms becoming active and commencing their migration from the ground up the outside of the stem and leaf-stalks into the basal leaves.
(Spring)



Eelworms entering leaf through the stomata.
(Spring-Summer)



Eelworms feeding and breeding in leaves and migrating upwards from leaf to leaf.
(Spring-Autumn)



Eelworms overwintering in soil, dead leaves and in basal buds.
(Winter)



Complete Cloth House Construction

Measure out a perfect rectangle on the ground, each side of the rectangle being 33 feet, or if larger, some multiple of 33 feet. Posts to be placed in the ground three feet deep, to carry the wires at positions that will line the wires in $16\frac{1}{2}$ foot centers, in every direction.

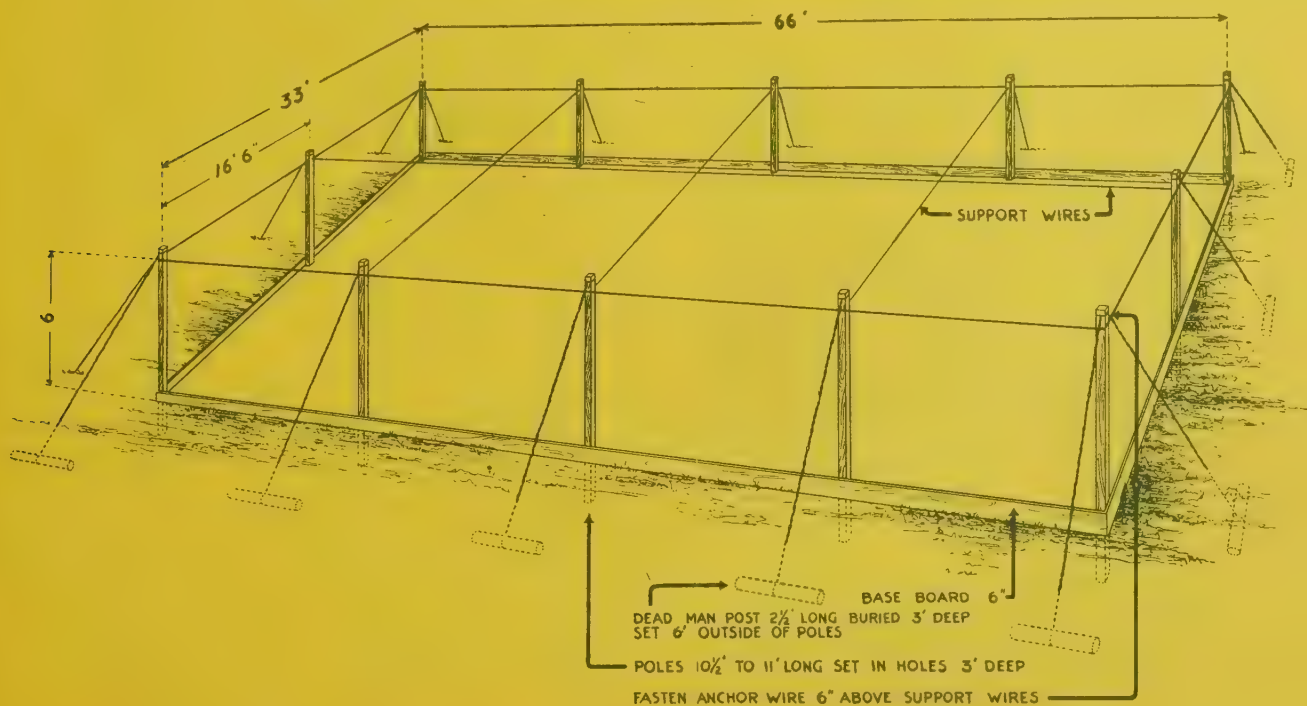
Each outside post must be anchored rigidly with a dead man, and each corner post must have two dead men. Nail the 6-inch baseboard in position around the outside of the house. Place two $1\frac{1}{2}$ inch staples six feet above the ground on each post so the No. 8 galvanized wires will pull through easily and use wire stretchers to stretch the wires taut.

To cover the top unroll the cloth at one end of the frame and with several men lift it across the support wires, unfold a few yards lengthwise beside the frame, then take the selvage edge of the house top and the selvage edge of the sidewall and roll them together five times around the side wire, where you have surplus cloth on the ends wrap this around the wires and sew it. Pin the cloth in place with 8 penny wire nails, pin 10 or 15 feet before you begin to sew, stretch the cloth only enough to keep the sagging out and be sure to keep the lengthwise reinforcement woven lines at an even distance parallel with the length of the wire.

Start at the post and sew by whipping around the wire using a tight lock stitch, so that the cloth will not slip. After this side is finished unfold the cloth to the other 33 feet side support wire and pin before sewing, making sure that the woven reinforced lines are at an even parallel distance from the support wire, sew ends with the same method. Only sew the cloth to support wires, fasten the sidewalls to the baseboard with the new aluminum fasteners every 9 inches.

A very good idea to prevent the cloth from chafing and wearing out the yarns is to cover the rough joints of the baseboard and also wrap the posts with either heavy paper or old cloth. Painting the cloth with **Cuprinol** at the baseboard and at the posts will prolong the life of the cloth.

The beds are laid out lengthwise in the house. The width of the beds may be made any width. It has been found that 5 beds 56 inches wide or 6 beds 44 inches wide are the easiest managed in a 33-foot house. It is best to put a 6-inch board around the border of each bed. The board will keep the water from running into the walks and makes for easier management of the house.





Novelty Chrysanthemums

YELLOW QUEEN

Yellow Sport of Orchid Queen blooming November 12. Highly recommended for natural flowering and delayed flowering into Thanksgiving season by the use of artificial light. Price \$8.00 per 100.



SENECA

An orange bronze decorative pompon with strong habit of growth that blooms November 1. The earliest bronze pompon in the cloth house shading program. It holds its color well. A very high producer, much better than Navaho. It is the most reliable bronze pompon for early shading. A much needed variety. Price \$8.00 per 100.



CONSTELLATION

Medium sized clear yellow pompon that blooms normally November 5. The flowers are produced on well spaced sprays. The two outstanding features of this variety are its uniformity in response to black cloth shading and its dependability as a high producer of quality flowers. Constellation has consistently yielded as high as the most productive of the commercial varieties. Price \$8.00 per 100.



TALLY-HO

A high quality intermediate pompon that blooms November 15. Medium to tall in height, the strong stems develop big, well branched sprays. Substance of the flower is similar to Sunnyside. It is very similar in many respects to the variety Princeton and compliments this variety in being a clear yellow and a well-rounded hard pompon. Price \$8.00 per 100.

Gloekner

Novelty Chrysanthemums

PINOCCHIO

A glistening white button for early cloth house shading. It responds beautifully to black cloth treatment and for this reason we believe it will fill the insistent demand for a small white pompon that can be easily shaded into late August and early September maturity. The flower is a beautifully formed tightly quilled button of lively and dainty appearance. It is of hard substance and has good keeping and shipping qualities. The color is a clear sparkling white. The growth is vigorous, taller than Irene and requires less time between pinching and shading to form a fuller spray of flowers. Bunches of Pinocchio appear smarter than Irene because the spray formation is more nearly single planed; and fresher because of the more uniform opening of its flowers.

Price \$6.00 per 100.



CAROLYN YOSICK

This small, lavender pink pompon responds exceptionally well to black cloth shade and is particularly of value for August or September flowering along with Pinocchio and Gold Coast. You will welcome its dependable growing habit, as unlike Jewell, it does not crown, and compared with Jessie and Pink Dot, it has a more rigid stem than either one. The small decorative flower has excellent color-holding qualities even under the earliest shadings. Carolyn Yosick shows up best under artificial light that remarkably softens or brightens the color. Natural blooming season October 20. Price \$7.00 per 100.

GOLD COAST

A small, intense deep yellow pompon of firm substance flowering naturally October 25. Since Gold Coast can be shaded ideally, we are recommending it along with Pinocchio and Carolyn Yosick as the important trio for shading in 1947. It has the same clean, vigorous free growing habit of Pinocchio and also resembles this variety very much in its production. For cloth house growing, it is a top notch variety—easily grown and consistently dependable. In our opinion, Gold Coast is a "must" for early shading. Price \$6.00 per 100.





Novelty Garden Chrysanthemums

HONEYCOMB

A small, perfectly formed pompon of intense golden yellow, blooming September 25. The flowers are borne on well formed sprays, nearly ideal for cut flowers of medium 18-22" stems.

Honeycomb is a marked advance over the widely grown and well known Early Yellow and Pomponette in that the habit of growth is more vigorous and productive, the flowering season is equally early and the quality and color of the flower is such as to closely rival many greenhouse grown counterparts.

Honeycomb will shape up to a fine pot plant or add a distinctive note of formality and rich color to the fall garden scene. **Price \$8.00 per 100.**

SERENITY

The major requirements of a good garden chrysanthemum are early, showy flowers, borne on rigid compact, bushy plants. A degree of resistance to frost winter kill, insects and diseases is equally desirable. Serenity combines all of these qualities plus a uniformity of growth and flowering seldom exceeded by an outdoor chrysanthemum. It is a beautiful creamy white, heavily petalled white daisy that opens rapidly to a real show of literally hundreds of blooms.

As a pot plant, it resembles the bushy, compactness of Judith Anderson and Pomponette. The shapely plant, because of its strength and rigidity makes a beautiful border or low hedge, blooming September 25. **Price \$8.00 per 100.**

SPELLBOUND

A striking 3 inch pink decorative that combines the beauty and grace of Lavender Lady with the durability and substance of Jean Treadway. Spellbound captivates the eye with its gloss and finish derived from Burgundy. The plant is a solid, compact bush attaining a height of 24 inches, blooming September 25. The characteristic, uniformly planed flower development contributes to a wonderfully showy mass effect that cannot fail to greatly enhance the early fall garden. The habit of growth is equally ideal for pot plant culture. **Price \$8.00 per 100.**

ALLEGRO

A glowing shrimp-pink suffused with coppery salmon pompon. One of the finest varieties for cutting, maturing October 15.

Price \$6.00 per 100.

AVIATOR

A rich coppery red pompon maturing October 10. A vigorous and easy grower.

Price \$6.00 per 100.



Re-Selection Program

Many varieties of Chrysanthemums have been removed from the available list for the coming year because it was deemed necessary to carry out a Re-selection Program.

These varieties have been withdrawn because they show an abnormal growth habit. A percentage of the plants in these varieties grew and flowered normally while some plants remained short and flowered a trifle earlier with smaller blooms and if pink or bronze the flowers were faded. This stunted growth has been reported from all areas producing Chrysanthemums.

Scientific investigations from many state and federal institutions have been working on this disorder but at present do not know the cause. Many theories have been proposed and until they have been proven it remains unsolved.

The latest investigations point to several ways this trouble might spread. One is that the straw colored aphid, that has been so prevalent the past two years, is spreading it from plant to plant. The other is that the trouble is picked up through the soil. Therefore, the most logical corrective measure would be through a program of re-selecting these affected varieties under hospital sterile conditions.

Yoder Brother Inc., have started a rigid re-selection program. Cuttings from only the most vigorous plants are removed under sterile conditions, being sure no hands or unsterilized container or tools ever touch the cutting. After rooting these cuttings, they are planted into pots so the root system is never disturbed. These plants are then grown under conditions where insects are never present. If later any abnormal growth develops the original plant and all its progeny are removed.

We do hope that you can adjust your growing program for the coming season without these varieties.

No expense is being spared on this re-selection program.

We assure you these varieties will be brought back into the list as soon as possible.

The following varieties are being dropped this year for re-selection:

ALAMEDA
ALBATROSS
ANACONDA
APRICOT QUEEN
BETSY ROSS
BLAZING GOLD
BRONZE GOLDSMITH
BRONZE SUPREME
CAVALCADE
CHATTANOOGA
CHICAGO PEARL
CITRONELLA
CORDOVA
CRYSTAL JEWELL
DEBONAIR
DECEMBER GLORY LARGE
DECEMBER WHITE
DERIGOLD
DETROIT NEWS
DOROTHY TURNER
EARLY OCTOBER
EUROPA
FRIENDLY RIVAL
GLEAM

GLITTERS
GOLD LODE
GOLDSMITH
GOLDEN EMBLEM
GOLDEN MRS. ROSS
GOLDEN SPRAY
GOLDEN SURPRISE
GOOD NEWS
HARVESTER
HELIOS
IMP. DEC. BEAUTY
IMP. YELLOW CHATTANOOGA
IRENE
IVORY SNOW
JUSTRITE
LAKME
LODESTAR
M. MOELLER
MARKETEER
MARY L. HALL
MATCHLESS
METEORE
NATOMA
NAVAHO

NEVADA
NEW YORK
OMEGA
PENROD
PINK TURNER
POM. DEC. GLORY
PROSPERITY
RED MELBA
REV. BUSHNELL
RIVIERA
ROBIN HOOD
ROSALIND
ROYAL CRIMSON
RUSTICON
SHASTA
SILVER MOON
SUNKIST
UVALDA
WHITTIER
YELLOW CORDOVA
YELLOW HAMMER
YELLOW IRENE
YELLOW MEFO



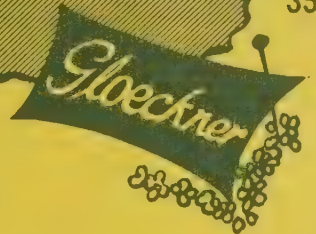
Large Flowering Varieties

YELLOW

Name and Description	Last Pinch	Height	Select Bud	Matures	Rooted Price Per 100
Golden October. Deep lemon yellow. Incurved.	July 5	Med.	Aug. 25	Oct. 10	\$4.75
Celestra. Lemon yellow. Incurved.	July 5	Med.	Ter. Bud	Oct. 15	4.00
Mrs. H. E. Kidder. Deep lemon yellow. Incurved.	July 12	Med.	Aug. 25	Oct. 20	4.00
Yellow Ambassador. Lemon yellow. Incurved.	July 12	Med.	Ter. Bud	Oct. 23	4.25
Sunglow. Golden Yellow. Incurved.	July 12	Med.	Aug. 25	Oct. 25	4.00
Golden Glory. Golden yellow. Semi-incurved.	July 16	Short	Aug. 25	Nov. 1	4.25
Indianapolis Yellow. Lemon yellow. Incurved.	July 19	Med.	Sept. 5	Nov. 8	4.50
Cardonia. Deep golden yellow. Incurved.	July 19	Med.	Sept. 5	Nov. 10	3.75
Yellow Queen. Yellow sport from Orchid Queen	July 20	Med.	Sept. 8	Nov. 12	8.00
Imp. Honeydew. Pale golden yellow. Incurved.	July 20	Short	Sept. 10	Nov. 15	4.25
Yellow Monument. Lemon yellow. Incurved.	July 22	Med.	Sept. 10	Nov. 15	4.00
Marie DePetris. Deep golden yellow. Incurved.	July 25	Short	Sept. 15	Nov. 23	4.00
Sun Gold. Lemon yellow. Semi-Incurved.	July 28	Med.	Sept. 30	Nov. 25	4.25
Golden Pearson. Golden yellow. Incurved.	July 28	Med.	Sept. 30	Nov. 25	3.75
Golden Mistletoe. Pale golden yellow. Incurved.	Aug. 4	Med.	Sept. 30	Dec. 10	4.00
Improved Tobin's Late Yellow. Deep lemon yellow. Semi-Incurved.	Aug. 10	Short	Sept. 30	Dec. 15	4.25

WHITE

Smith's Early White. Incurved.	July 1	Tall	Aug. 10	Oct. 5	3.75
Quaker Maid. White. Reflexed.	July 5	Med.	Aug. 25	Oct. 15	3.75
Silver Sheen. Incurved.	July 12	Med.	Aug. 30	Oct. 18	3.75
Christina. Incurved.	July 12	Short	Aug. 25	Oct. 20	4.00
Ambassador. Cream white. Incurved.	July 12	Med.	Ter. Bud	Oct. 23	4.25
Snow White. Incurved.	July 16	Med.	Ter. Bud	Nov. 1	3.75
Indianapolis White. Incurved.	July 19	Med.	Sept. 5	Nov. 8	4.50
Jean Elizabeth. Incurved.	July 19	Med.	Sept. 8	Nov. 12	8.00
Monument. Ivory white. Incurved.	July 22	Med.	Sept. 10	Nov. 15	4.00
Mefo. Ivory white. Incurved.	July 25	Med.	Sept. 20	Nov. 20	4.25
White Frick. White suffused with pink. Incurved	July 28	Short	Sept. 10	Nov. 25	5.00
White Mistletoe. Incurved.	Aug. 4	Med.	Sept. 30	Dec. 10	4.00
Smith's Late White. Ivory white. Semi-Incurved.	Aug. 10	Short	Sept. 30	Dec. 15	4.25



Large Flowering Varieties

BRONZE

Name and Description	Last Pinch	Height	Select Bud	Matures	Rooted Price Per 100
Indianola. Pale reddish bronze. Incurved.....	July 5	Med.	Aug. 25	Oct. 10	\$4.25
Hilda Bergen. Dark reddish bronze. Incurved.....	July 12	Med.	Aug. 25	Oct. 25	4.25
Ivanhoe. Reddish bronze. Incurved.....	July 16	Med.	Aug. 30	Nov. 1	6.00
Indianapolis Bronze. Buff bronze. Incurved.....	July 19	Med.	Sept. 5	Nov. 8	4.50
Bronze Orchid Queen. Apricot buff. Incurved.....	July 19	Med.	Sept. 8	Nov. 12	5.00
Gladys Pearson. Light buff bronze. Incurved.....	July 28	Med.	Sept. 30	Nov. 25	3.75
Oak Leaf. Reddish bronze. Incurved.....	July 28	Med.	Sept. 30	Nov. 25	3.75
Bronze Frick. Light bronze. Incurved.....	July 28	Short	Sept. 10	Nov. 25	5.00
Bronze Mistletoe. Buff bronze. Incurved.....	Aug. 4	Med.	Sept. 30	Dec. 10	4.00

PINK

Pink Chief. Lavender. Incurved.....	July 5	Tall	Ter. Bud	Oct. 15	4.25
October Rose. Light lavender. Incurved.....	July 5	Med.	Sept. 5	Oct. 15	4.00
Major Ed. Bowes. Deep lavender. Incurved.....	July 12	Med.	Aug. 30	Oct. 20	4.50
J. W. Prince. Rose pink. Incurved.....	July 16	Short	Aug. 30	Nov. 5	3.75
Indianapolis Pink. Deep lavender. Incurved.....	July 19	Med.	Sept. 5	Nov. 8	4.50
Dark Pink Orchid Queen. Mauve Pink. Incurved.....	July 19	Med.	Sept. 8	Nov. 15	4.25
Orchid Queen. Orchid pink. Incurved.....	July 19	Med.	Sept. 8	Nov. 12	8.00
Thanksgiving Pink. Amaranth. Reflexed.....	July 25	Short	Sept. 15	Nov. 23	3.75
Distinction. Lavender. Incurved.....	July 28	Med.	Ter. Bud	Nov. 25	4.25
Helen Frick. Rose pink. Incurved.....	July 28	Short	Sept. 10	Nov. 25	4.50
Edwin Seidewitz. Lavender. Incurved.....	July 30	Tall	Sept. 15	Nov. 30	3.75
Pink Mistletoe. Lavender. Incurved.....	Aug. 4	Med.	Sept. 30	Nov. 10	4.00

RED

Mrs. David F. Roy. Crimson. Incurved.....	July 22	Short	Sept. 15	Nov. 10	4.75
Garnet King. Dark red. Reflexed.....	July 25	Med.	Sept. 20	Nov. 18	5.00

Odd Formed - Spider Varieties

Rayonnante. Pink spider.....	July 16	Med.	Ter. Bud	Nov. 5	4.50
------------------------------	---------	------	----------	--------	------

Exhibition Varieties

William Turner. White. Incurved.....	July 16	Med.	Aug. 30	Nov. 5	4.50
Yellow Turner. Light yellow. Incurved.....	July 16	Med.	Aug. 30	Nov. 5	4.50

Novelty Chrysanthemums

DARK PINK ORCHID QUEEN

A sport of Orchid Queen of intense mauve pink much deeper than the parent. The sport shows many new and important qualities. The flower is larger and more fully rounded. Added vigor gives a stronger and taller stem than in the original. But most important of all, DARK PINK ORCHID QUEEN can be shaded for early flowering much more satisfactorily than Orchid Queen. A promising addition to your list of good standards. Price \$7.00 per 100.





Pompon and Decorative Varieties

YELLOW

Name and Description	Last Pinch	Height	Size & Type	Matures	Rooted Price Per 100
Rodell Improved. Light lemon yellow.	July 5	Short	Int. Pom.	Oct. 20	\$3.75
Gold Coast. Golden yellow.	July 12	Med.	Int. Pom.	Oct. 25	6.00
*Golden Herald. Deep golden yellow.	July 12	Med.	L. Dec.	Oct. 25	4.25
Yellow Dot. Yellow with bronze center.	July 12	Med.	Int. Pom.	Oct. 25	4.00
Yellow Arcadia. Pernet yellow.	July 16	Med.	Int. Pom.	Oct. 28	4.00
Yellow Sea Gull. Pale lemon yellow.	July 16	Tall	Int. Pom.	Nov. 1	3.75
Barcarole. Golden yellow.	July 19	Med.	Int. Pom.	Nov. 5	5.00
Constellation. Deep lemon yellow.	July 19	Med.	Int. Dec.	Nov. 5	8.00
Nuggets. Light lemon yellow.	July 19	Short	S. Pom.	Nov. 5	3.75
Yellow Bushnell. Pernet yellow.	July 19	Tall	Int. Pom.	Nov. 8	4.50
Pixie. Deep golden yellow.	July 19	Med.	S. Pom.	Nov. 10	4.00
Princeton. Orange yellow.	July 22	Med.	Int. Dec.	Nov. 15	4.25
Yellow Fellow. Deep lemon yellow.	July 22	Med.	Int. Dec.	Nov. 15	4.50
Tally-Ho. Golden yellow.	July 22	Med.	Int. Pom.	Nov. 15	8.00
Sunnyside. Golden yellow.	July 28	Med.	Int. Pom.	Nov. 25	5.00
Yellow Cameo. Deep lemon yellow.	July 31	Med.	Int. Pom.	Dec. 5	6.00
December Gold. Deep golden yellow.	Aug. 2	Med.	Int. Dec.	Dec. 15	4.50
*Vibrant. Deep lemon yellow.	Aug. 4	Med.	Int. Dec.	Dec. 20	4.25
Yellow Snow. Deep lemon yellow.	Aug. 10	Med.	Int. Pom.	Dec. 30	3.75

WHITE

White Jewell. White tinged with light lavender.	July 8	Short	S. Pom.	Oct. 15	4.00
*Silver Ball.	July 8	Med.	L. Pom.	Oct. 15	3.75
Minong.	July 12	Med.	S. Pom.	Oct. 20	3.75
Pinocchio.	July 12	Med.	S. Pom.	Oct. 25	6.00
Arcadia.	July 16	Med.	Int. Pom.	Oct. 28	4.00
Sea Gull. Cream white.	July 16	Tall	Int. Pom.	Nov. 1	3.75
*White Doty. Ivory white.	July 16	Tall	L. Pom.	Nov. 1	4.00
Vesper.	July 19	Tall	Int. Pom.	Nov. 10	5.00
Pearl.	July 25	Tall	Int. Pom.	Nov. 20	3.75
Seafoam.	July 25	Med.	Int. Pom.	Nov. 20	4.00
Priscilla.	July 28	Tall	L. Pom.	Nov. 28	5.00
*White Yuletide.	July 28	Short	Int. Pom.	Nov. 28	3.75
Royal Queen.	July 31	Med.	Int. Pom.	Dec. 5	3.75
Cameo. Ivory white.	July 31	Med.	Int. Pom.	Dec. 5	4.25
Snow. Ivory white.	Aug. 10	Med.	Int. Pom.	Dec. 30	3.75
Revelation.	Aug. 10	Med.	Int. Pom.	Jan. 5	5.00

BRONZE and RED

Roman Bronze. Bronze suffused with pink.	July 12	Tall	Int. Pom.	Oct. 20	4.25
Adelaide. Dark reddish bronze.	July 12	Med.	S. Pom.	Oct. 23	4.75
*Jemima. Dark reddish bronze.	July 12	Med.	Int. Pom.	Oct. 23	4.50
Fire Bird. Dark reddish bronze.	July 12	Med.	Int. Dec.	Oct. 25	4.50
Seneca. Orange bronze.	July 19	Med.	Int. Dec.	Nov. 1	8.00
Red Rust. Reddish bronze.	July 19	Med.	L. Pom.	Nov. 5	7.00
Bronze Bulkeley. Bronze suffused with pink.	July 19	Tall	Int. Pom.	Nov. 8	4.50
Cassandra. Orange bronze.	July 22	Med.	Int. Pom.	Nov. 10	4.25
*Bronze Masterpiece. Apricot bronze.	July 22	Med.	Int. Pom.	Nov. 15	3.75
Red Princeton. Brazil red.	July 22	Med.	Int. Dec.	Nov. 15	4.25
Catherine. Light reddish bronze.	July 25	Med.	Int. Dec.	Nov. 20	3.75
Legal Tender. Bronze and gold.	July 25	Med.	Int. Dec.	Nov. 20	3.75

* Responds to disbudding.

CHRYSANTHEMUM CUTTINGS



Pompon and Decorative Varieties

PINK

Name and Description	Last Pinch	Height	Size & Type	Matures	Rooted Price Per 100
Jewell. Lavender	July 8	Short	S. Pom.	Oct. 15	\$4.00
Dark Pink Jewell. Deep lavender	July 8	Short	S. Pom.	Oct. 15	4.50
Carolyn Yosick. Lavender	July 8	Med.	S. Dec.	Oct. 20	7.00
Pink Pearl. Rose pink	July 8	Med.	S. Pom.	Oct. 20	4.75
Capt. Cook. Deep rose pink	July 12	Tall	Int. Pom.	Oct. 20	4.25
Jessie. (Madeline). Light lavender	July 12	Med.	Int. Pom.	Oct. 25	4.00
Pink Dot. White with pink center	July 12	Med.	Int. Pom.	Oct. 25	4.00
*Lillian Doty. Light rose pink	July 16	Med.	L. Pom.	Nov. 1	4.00
Dark Pink Bulkeley. Dark rose pink	July 19	Tall	Int. Pom.	Nov. 8	4.50
Mrs. Morgan G. Bulkeley. Light rose pink	July 19	Tall	Int. Pom.	Nov. 8	4.50
*Thyra. Lavender	July 19	Med.	L. Pom.	Nov. 10	4.00
*Masterpiece. Tourmaline pink	July 22	Med.	Int. Pom.	Nov. 15	3.75
Uneeda. Lavender	July 28	Med.	Int. Pom.	Nov. 25	3.75
Usona. Lavender	July 28	Med.	Int. Pom.	Nov. 25	5.00
Pink Treasure Island. Light lavender	Aug. 6	Med.	Int. Dec.	Dec. 20	5.00

*Responds to disbudding.

Insecticides and Fungicides

Azofume 45 Candles	Per Case (96)	\$43.20
Arsenate of Lead	4 lbs. \$1.00—24 lbs.	4.50
Benzo-Fume Pressure Fumigators.		
	Case (12-1/2 lbs.)	3.20
	Case (12-1 lb.)	5.50
Calcium Cyanide G. Fumigant		
	5 lbs. \$3.00—25 lbs.	10.00
Deenate 50 W (DDT)	4 lbs. \$3.20—25 lbs.	18.75
DuPont Spreader Sticker	Gal. \$6.00—5 Gal.	28.00
Evergreen	Gal.	12.60
Fermate	3 lbs. \$2.70—25 lbs.	18.75
Hypozene 20	10 lbs. \$10.00—25 lbs.	22.00
	50 lbs. \$42.00—100 lbs.	80.00
Loro	Gal. \$10.50—5 Gal.	45.00
Nicofume Liquid	Gal.	11.95

Nicofume Pressure Fumigators.		
	1/2 lb. cans (12 cans)	\$ 4.60
	1 lb. cans (12 cans)	7.95
NNOR	Gal.	10.00
No-Py-Ro	Gal. \$10.00—5 Gal.	45.00
Optox	Gal.	12.00
P40	25 lbs. \$4.25—50 lbs.	8.00
	100 lbs. \$14.00—1000 lbs.	125.00
Red Arrow Special	Gal.	14.00
Sodium Selenate	Per lb.	4.00
Tarter Emetic	10 lbs \$8.50—100 lbs.	75.00
Tobacco Dust	100 lbs. \$3.50—Ton	65.00
Thiocide	Gal.	6.00
Vapotone	Gal.	11.90
Yamtox with DDT	Gal.	12.00
Yamtox with B.H.C.	Gal.	18.00

Novelty Chrysanthemums

SUNNYSIDE

A persistent demand from all wholesale growers calls for a round, hard flower that will ship and handle without bruising or other damages. Sunnyside exactly fills this demand. It is a strong grower and will consistently produce a heavy crop of well branched sprays that are easy to bunch. The quality of the flower is equal or better than any existing yellow pompon. The color is a clear brilliant yellow. It matures for Thanksgiving and later. Price \$5.00 per 100.

VESPER

Vesper is a white pompon that blooms normally November 10. The flower is very pure in color and has unusually good substance. Free growth, easy culture, and a well branched spray ranks Vesper with the best of the early dependable varieties now in use. This unique combination of flower quality and free growth habit plus its favorable response to black cloth treatment should make this variety very popular. Price \$5.00 per 100.





Single-Daisy Type Varieties

YELLOW.

Name and Description	Last Pinch	Height	Size	Matures	Rooted Price Per 100
Yellow Daisy. Deep lemon yellow.....	July 16	Med.	Int.	Nov. 1	\$4.25
*Golden Jane. Brilliant golden yellow.....	July 28	Med.	Large	Nov. 30	4.00

WHITE

*White Mensa. Ivory white.....	July 22	Med.	Int.	Nov. 10	3.75
Yukon	Aug. 7	Tall	Int.	Dec. 10	3.75

BRONZE

October Bronze. Light bronze.....	July 16	Med.	Int.	Oct. 28	4.75
Bronze Buckingham. Light orange bronze.....	July 16	Short	Int.	Nov. 3	4.25
Sylvanna. Bittersweet orange.....	July 22	Med.	Int.	Nov. 10	4.00
*Apricot Valencia. Deep apricot buff.....	July 28	Med.	Large	Nov. 30	4.00
*Jane. Light buff bronze. Sport from Valencia....	July 28	Med.	Large	Nov. 30	3.75

PINK

October Pink. Light lavender.....	July 16	Med.	Int.	Oct. 28	4.75
W. H. Buckingham. Rose pink.....	July 16	Short	Int.	Nov. 3	4.25
Brocade. Cameo pink.....	July 22	Med.	Int.	Nov. 15	7.00
Hasegawa Pink. Lavender.....	July 28	Med.	Int.	Nov. 25	3.75
*Valencia. Orchid pink.....	July 28	Med.	Large	Nov. 30	3.75
*Dark Pink Valencia. Deep orchid pink.....	July 28	Med.	Large	Nov. 30	3.75

RED

Red Daisy. Deep red.....	July 19	Med.	Int.	Nov. 5	4.75
Bittersweet. Bittersweet red.....	July 19	Med.	Int.	Nov. 8	5.00
*Carnelia. Bittersweet red.....	July 28	Short	Large	Nov. 30	5.50

Anemone Flowered Varieties

YELLOW

Sunray. Light lemon yellow.....	July 22	Med.	Int.	Nov. 10	3.75
*Susanne Miller. Buff yellow. Sport from Norma....	July 25	Tall	Large	Nov. 18	3.75
*Yellow Rolinda. Light buff yellow.....	July 25	Med.	Int.	Nov. 23	3.75
*Yellow Supreme. Buff yellow suffused with pink....	Aug. 2	Med.	Large	Dec. 10	3.75
*Yellow Garza Supreme. Pale lemon yellow.....	Aug. 4	Short	Int.	Dec. 15	4.75

WHITE

Blanche.....	July 16	Med.	Int.	Nov. 1	4.25
*White Anemone.....	July 19	Tall	Int.	Nov. 5	4.50
*Little America.....	July 19	Med.	Int.	Nov. 10	3.75
*White Freida. White with yellow cushion.....	July 22	Med.	Large	Nov. 15	4.00
*White Norma. White suffused with pink.....	July 25	Tall	Large	Nov. 18	3.75
*Long Island Beauty. White with yellow cushion....	July 25	Med.	Large	Nov. 20	3.75
*White Supreme. White suffused with pink.....	Aug. 2	Med.	Large	Dec. 10	3.75
Garza Supreme.....	Aug. 4	Short	Int.	Dec. 15	4.75

BRONZE

Yolanda. Light orange bronze.....	July 28	Med.	Int.	Nov. 25	3.75
-----------------------------------	---------	------	------	---------	------

PINK

Orchid Beauty. Orchid with golden cushion....	July 22	Med.	Int.	Nov. 15	3.75
*Freida. Light lavender with yellow cushion....	July 22	Med.	Large	Nov. 15	4.00
*Norma. Orchid pink petals with salmon cushion....	July 25	Tall	Int.	Nov. 18	3.75
*Dark Pink Norma. Deep lavender.....	July 25	Tall	Int.	Nov. 18	3.75
*Beautiful Lady. Deep lavender rays with cream white cushion.....	July 28	Short	Large	Nov. 25	4.00
*Anemone Valencia. Orchid pink.....	July 28	Med.	Large	Nov. 28	8.00
*Enchantress. Deep pink with light pink cushion....	July 31	Med.	Large	Dec. 5	3.75
*Dark Pink Supreme. Lavender.....	Aug. 2	Med.	Large	Dec. 10	3.75

RED

*The Titan. Scarlet crimson with bronzy red cushion.....	July 19	Med.	Large	Nov. 10	4.00
*Red Rolinda. Deep reddish bronze.....	July 25	Med.	Int.	Nov. 23	3.75

* Responds to disbudding.



Pot Plant Varieties

YELLOW

Name and Description	Last Pinch	Type	Spray or Disbud	Matures	Routed Price Per 100
Early Yellow. Light golden yellow	Aug. 24	S. Pom.	Spray	Sept. 15	\$4.75
Rodell Improved. Yellow. Sport from Rodell	Aug. 24	Int. Pom.	Spray	Oct. 20	3.75
Mrs. H. E. Kidder. Bright Yellow	Aug. 24	L. F. Inc.	Disbud	Oct. 20	4.00
Sunglow. Yellow	Aug. 24	L. F. Inc.	Disbud	Oct. 25	4.00
Golden Glory. Golden yellow	Aug. 24	L. F. Inc.	Disbud	Nov. 1	4.25
Indianapolis Yellow. Lemon yellow	Aug. 29	L. F. Inc.	Disbud	Nov. 8	4.50
Cardonia. Deep golden yellow	Aug. 29	L. F. Inc.	Disbud	Nov. 10	3.75
Yellow Beauty. Golden yellow	Aug. 29	L. Pom.	Disbud	Nov. 10	4.00
Sunray. Yellow	Sept. 3	Int. Anem.	Spray	Nov. 15	3.75
Yellow Fellow. Deep lemon yellow	Sept. 3	Int. Dec.	Spray	Nov. 15	4.50
Imp. Honeydew. Lemon yellow	Sept. 3	L. F. Inc.	Disbud	Nov. 15	4.25
Bonnaffon DeLuxe. Golden yellow	Sept. 3	L. F. Inc.	Disbud	Nov. 20	3.75
Marie De Petris. Deep golden yellow	Sept. 3	L. F. Inc.	Disbud	Nov. 23	4.00
Yellow Rolinda. Buff yellow	Sept. 8	Int. Anem.	Spray	Nov. 23	3.75
Sun Gold. Lemon yellow	Sept. 8	L. F. Dec.	Disbud	Nov. 25	4.25

WHITE

White Jewell. White suffused with pink	Aug. 24	S. Pom.	Spray	Oct. 15	4.00
Minong. White	Aug. 24	S. Pom.	Spray	Oct. 20	3.75
Christina. White, sport from Rose Chochoard	Aug. 24	L. F. Inc.	Disbud	Oct. 20	4.00
Granite State. White	Aug. 24	L. Pom.	Disbud	Oct. 25	6.00
Snow White.	Aug. 29	L. F. Inc.	Disbud	Nov. 1	3.75
Indianapolis White. White	Aug. 29	L. F. Inc.	Disbud	Nov. 8	4.50
Richard Mandel. Pure white	Aug. 29	L. Pom.	Disbud	Nov. 10	3.75
Little America. Pure white	Aug. 29	Int. Anem.	Disbud	Nov. 10	3.75
Long Island Beauty. White with yellow cushion	Sept. 3	L. Anem.	Disbud	Nov. 20	3.75
White Frick. White suffused with pink	Sept. 3	L. F. Inc.	Disbud	Nov. 25	5.00

BRONZE and RED

Early Bronze. Orange bronze	Aug. 24	S. Pom.	Spray	Sept. 15	4.75
Indianola. Light bronze	Aug. 24	L. F. Inc.	Disbud	Oct. 10	4.25
Hilda Bergen. Bronze	Aug. 24	L. F. Inc.	Disbud	Oct. 25	4.25
Ivanhoe. Reddish bronze	Aug. 29	L. F. Inc.	Disbud	Nov. 1	6.00
Indianapolis Bronze. Buff bronze	Aug. 29	L. F. Inc.	Disbud	Nov. 8	4.50
Bronze Masterpiece. Apricot bronze	Aug. 29	Int. Pom.	Disbud	Nov. 15	3.75
Gypsy. Pale reddish bronze	Aug. 29	S. Anem.	Spray	Nov. 15	3.75
Garnet King. Deep, bright red	Sept. 3	L. F. Dec.	Disbud	Nov. 18	5.00
Legal Tender. Bronze and gold	Sept. 3	Int. Dec.	Spray	Nov. 20	3.75
Red Rolinda. Deep reddish bronze	Sept. 8	Int. Anem.	Spray	Nov. 23	3.75
Bronze Frick. Light bronze	Sept. 8	L. F. Inc.	Disbud	Nov. 25	5.00

PINK

Jewell. Bright rose pink	Aug. 24	S. Pom.	Spray	Oct. 15	4.00
J. W. Prince. Rose pink	Aug. 29	L. F. Inc.	Disbud	Nov. 5	3.75
Indianapolis Pink. Deep lavender	Aug. 29	L. F. Inc.	Disbud	Nov. 8	4.50
Thyra. Dark pink	Aug. 29	L. Pom.	Disbud	Nov. 10	4.00
Queen of Pinks. (Pink Mandel.) Lavender	Aug. 29	L. Pom.	Disbud	Nov. 10	3.75
Masterpiece. Tourmaline pink	Aug. 29	Int. Pom.	Disbud	Nov. 15	3.75
Orchid Beauty. Orchid with golden cushion	Aug. 29	Int. Anem.	Disbud	Nov. 15	3.75
Helen Frick. Rose pink	Sept. 8	L. F. Inc.	Disbud	Nov. 25	4.50
Beautiful Lady. Deep lavender rays with cream white cushion	Sept. 8	L. Anem.	Disbud	Nov. 25	4.00
Thanksgiving Pink. Amaranth	Sept. 8	L. F. Ref.	Disbud	Nov. 25	3.75



Hardy or Garden Varieties

The following varieties have been selected from a large list and have proven themselves best suited for cut flowers as well as general outdoor display. Many florists have grown these garden varieties in the cloth house and greenhouses with excellent results. No black cloth treatment is necessary for September and early October flowering.

There is also an increasing demand from the retail customers for small plants in the spring as well as field clumps in early fall. Might we suggest planting some of these garden varieties around your greenhouse? This will give an array of color in the fall when the annuals usually are finished blooming.

YELLOW

Name and Description	Last* Pinch	Size & Type	Matures	Rooted Price Per 100
Early Yellow. Light golden yellow.	June 20	S. Pom.	Sept. 15	\$4.75
Honeycomb. Golden yellow.	June 25	S. Pom.	Sept. 25.	8.00
King Midas. Light lemon yellow.	June 30	Int. Dec.	Sept. 30	4.00
Rodell Improved. Light lemon yellow.	July 8	Int. Pom.	Oct. 20	3.75

WHITE

Jean Cumming. Ivory white.	June 20	Int. Dec.	Sept. 20	5.50
Serenity. White.	June 25	Int. Sing.	Sept. 25	8.00
Avalanche. White	July 4	Int. Dec.	Oct. 5	4.25
White Jewell. White tinged with light lavender.	July 8	S. Pom.	Oct. 15	4.00
Silver Ball.	July 8	L. Pom.	Oct. 15	3.75

BRONZE and RED

Early Bronze. Orange bronze.	June 20	S. Pom.	Sept. 15	4.75
Burgundy. Wine red.	July 4	Int. Dec.	Oct. 5	4.00
Ruby Pompon. Ruby crimson.	July 4	Int. Pom.	Oct. 5	4.00
Red Velvet. Velvety crimson.	July 4	Int. Dec.	Oct. 8	4.00
Aviator. Coppery red.	July 4	Int. Dec.	Oct. 10	6.00

PINK

Early Wonder. Lavender.	June 20	Int. Dec.	Sept. 25	3.75
Spellbound. Lavender	June 25	L. Dec.	Sept. 25	8.00
Mrs. du Pont. Peach pink shading to rosy salmon.	July 4	Int. Dec.	Oct. 5	4.00
Lavender Lady. Lavender.	July 4	Int. Dec.	Oct. 8	4.00
Allegro. Shrimp pink.	July 8	Int. Dec.	Oct. 15	6.00
Jewell. Lavender	July 8	S. Pom.	Oct. 15	4.00
Dark Pink Jewell. Deep Lavender. Sport from Jewell.	July 8	S. Pom.	Oct. 15	4.50

* Pinch three weeks later if wanted for plant sale or use in landscape border.



*Gloeckner
Chrysanthemum
Manual*

